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SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION, CENTRAL REGION, 1964-1966.

BY- WARMBROD, J. ROBERT

ILLINOIS UNIV., URBANA, COLL. OF EDUCATION

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DESCRIPTORS- *AGRICULTURAL EDUCATION, *EDUCATIONAL RESEARCH, *DOCTORAL THESES, *MASTERS THESES, *ANNOTATED BIBLIOGRAPHIES, CENTRAL STATES,

NINETY-NINE DOCTORAL DISSERTATIONS, STAFF STUDIES, AND MASTERS' THESES IN AGRICULTURAL EDUCATION ARE REPORTED IN THE FOLLOWING AREAS -- (1) ADMINISTRATION AND SUPERVISION, (2) AGRICULTURAL EDUCATION IN OTHER COUNTRIES, (3) CURRICULUM DEVELOPMENT, (4) EDUCATIONAL PROGRAMS, (5) EVALUATION, (6) GUIDANCE AND COUNSELING, (7) INSTRUCTIONAL MATERIALS, (8) LEARNING PROCESSES AND TEACHING METHODS, (9) MANPOWER NEEDS AND EMPLOYMENT OPPORTUNITIES, AND (10) TEACHER EDUCATION. THE PURPOSE, METHOD, AND FINDINGS OF EACH STUDY ARE SUMMARIZED. THE STUDIES ARE ARRANGED ALPHABETICALLY BY AUTHOR AND A SUBJECT INDEX IS INCLUDED. (JM)

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SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION

N ANNOTATED BIBLIOGRAPHY OF STUDIES IN AGRICULTURAL EDUCATION

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Agricultural Education Division. . .Vocational and Technical Education Department
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SUMMARIES OF STUDIES IN AGRICULTURAL EDUCATION

CENTRAL REGION

1964-1966

Compiled and Edited by
J. Robert Warmbrod, Associate Professor
Vocational and Technical Education
University of Illinois

Agricultural Education Division
Vocational and Technical Education Department
College of Education
University of Illinois
Urbana, Illinois

July, 1967

INTRODUCTION

This compilation of research in agricultural education includes 99 studies completed during 1964-65 and 1965-66. Studies conducted in each of the 13 states of the Central Region are included.

The criteria for the selection of studies to be included were those used for the selection of studies for the U.S. Office of Education publication Summaries of Studies in Agricultural Education. Usually, thesis studies that were limited to a specific community were not reported unless the topic, design, or findings of the research were of special interest or significance. All studies reported are available for loan from university libraries or departments of agricultural education or from state departments of vocational and technical education.

The compilation of abstracts of research in agricultural education is an activity of the Research Committee of the Agricultural Education Division of the American Vocational Association. A list of studies in progress during 1966-67, compiled by the Research Committee, was published in the April 1967, issue of the Agricultural Education Magazine.

J. Robert Warmbrod
Central Region Representative
Research Committee
Agricultural Education Division
AVA

July 1967

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SUMMARIES OF STUDIES, 1964-1966

1. ABEL, FRANCIS LEO. Competencies in Forage Crop Production and Utilization Needed by Farmers. Thesis, M.S., 1966, Iowa State University of Science and Technology, 72 pp. Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the degree that competencies in forage production are needed and possessed by both a selected sample of outstanding farmers and a random sample of 1950-54 Iowa High School graduates who are now farming and to determing the relationship of years of farming, size of farm, acres of forage, educational experience, and major type of livestock marketed to the degree that the competencies were needed and possessed.

Method. A list of 34 forage competencies were formulated on the basis of suggestions of a panel of forage specialists composed of six university staff members and 12 outstanding Iowa farmers. A questionnaire was submitted to 125 farmers in each sample group. They rated each of the 34 competencies according to need and possessed knowledge and provided information concerning their farming operations and educational experience. Usable questionnaires were received from 100 farmers in each sample. All comparisons between and within the two sample groups of farmers were made in terms of mean scores for each of the 34 competencies. Scores were derived from a five-point rating scale with four meaning very much competency and zero meaning no competency.

Findings. Both sample groups of farmers had higher overall mean scores for competence needed than for competence possessed. A difference of .56 and .68, respectively, existed between the overall mean scores for competence needed and possessed for the group of outstanding farmers and the 1950-1954 graduates.

When respondents were stratified by groups according to acres of forage grown, a comparison of scores indicated that forage acreage had little effect on scores. Farmers were grouped by major type of livestock produced and scores compared. The dairymen had the highest competence possessed score and were followed by sheepmen, beef producers, and swine producers in that order. Farmers who had either college or noncollege credit courses in forages had higher competence needed and possessed scores than those with no such training. Scores varied little among groups who had or had not received adult farmer or young farmer instruction in forages. The effect of high school vocational agriculture training on the scores of farmers was varied.

2. AHRENS, DONALD L. Influence of High School Vocational Agriculture on the Matriculation, Graduation, and Employment of Agricultural Engineering Graduates from the Iowa State University of Science and Technology. Thesis, M.S., 1966, Iowa State University of Science and Technology, 109 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the influence of high school vocational agriculture on the achievements both during and after college of agricultural engineering graduates from the Iowa State University of Science and Technology.

Method. Data were collected from 419 graduates who had graduated in agricultural engineering during the period 1942 to 1964. In order to make comparisons, the groups were divided according to whether they had or had not completed some high school vocational agriculture training. One hundred and twelve graduates who had taken at least three or more semesters of high school vocational agriculture were compared with 112 who had not.

Findings. Ninety-five percent of the vocational agriculture graduates compared to only 78 percent of the nonvocational agriculture graduates had lived on farms between their tenth and seventeenth birthdays. More of the fathers than mothers of each group had less than a high school education. More of the vocational agriculture graduates (28 percent) than the nonvocational graduates (16 percent) listed "own idea" as the factor most influential for their attendance at college. Twelve percent of the vocational agriculture graduates were influenced by the high school vocational agriculture instructor. The vocational agriculture graduates learned of the agricultural engineering profession earlier in that between ninth grade and initial college enrollment 73 percent of the vocational agriculture graduates had been told about agricultural engineering compared to 53 percent of the nonvocational agriculture graduates. Final cumulative college grade point averages were found to be highly correlated for each group with high school grade point averages, first-quarter college grade point averages, and third-quarter college cumulative grade point average.

A larger percentage of the vocational agriculture than nonvocational agriculture graduates took their first job in Iowa. The largest percentage of each group found their first employment in the farm equipment industries and they classified their first job as testing and/or designing. However, a higher percentage of the vocational agriculture graduates than nonvocational agriculture graduates had moved into the supervision and administration and/or management area in their 1964 employment.

When a comparison was made of the vocational agriculture and nonvocational agriculture graduates' income stratified by curriculum option areas at the various income points, the vocational agriculture graduates were higher than the nonvocational agriculture graduates at more points in 1964 than they were at the first income points. The above was also found to be true when the vocational agriculture and nonvocational agriculture graduates were compared by area of employment instead of option area.

3. AKERS, JOHN GARLAND. Administrators' Opinions Regarding Selected Policies for Vocational Agriculture. Master's Report, 1963, Kansas State University, 47 pp., Library, Kansas State University, Manhattan.

Purposes. To gather information about vocational training and experience of school administrators in South Central Kansas schools and to determine their opinions regarding (1) curriculum, (2) subject matter, (3) organization of classes, (4) teachers, (5) student development, and (6) financing for vocational agriculture.

Method. The data were obtained by personal interviews with administrators in the South Central Kansas schools that had vocational agriculture departments at the time of the study.

__Findings__. Eighty-two percent of the administrators in the study had no formal training in vocational education. Fifty-nine of the 82 percent felt that they should have had special vocational education, while 14 percent had taught vocational subjects. Formal training ranged from three semester hours to 48 hours. Administrators' experience with vocational education varied from one year to 28 years. Administrators felt that vocational agriculture should have specific objectives. Approximately ten percent of all students enrolled in the high schools were enrolled in vocational agriculture. Eighty-six percent of the administrators felt that vocational agriculture was an integral part of the secondary school program. Seventy-two percent of the administrators felt that young farmer and adult programs were an integral part of the total school program. Sixty-eight percent of the administrators felt that there should be a minimum and a maximum size class in vocational agriculture. The average for the minimum was eight students and the maximum was 20 students.

A majority of the administrators felt that vocational agriculture helped students to think, study, and develop ability to solve problems. They did not require students to take vocational agriculture, and a majority felt that college-bound students should take vocational agriculture if interested in agriculture. It was believed by the administrators that a majority of the vocational agriculture departments meet the needs of the community and need a budget for operation. The administrators felt that vocational agriculture was a costly program, but the development and teaching of students justified the high cost. A majority felt that it did not cost any more than other shop programs.

4. ALBRACHT, JAMES JOSEPH. A Process for Determing Vocational Competencies for the Performance of Essential Activities for the Sales Function by Sales Personnel in the Feed Industry, and the Loci at Which the Competencies Could Be Taught. Thesis, Ph.D., 1966, Michigan State University, 137 pp., Library, Michigan State University, East Lansing.

__Purpose__. To demonstrate a process for determining vocational competencies needed for the performance of the sales function of the feed industry, and the loci at which the competencies could be taught. The process used in this study incorporated four factors: the use of an industry function in identifying vocational competencies, and loci at which the competencies could be taught; the use of a regional survey; and the use of a combined industry-education jury.

__Method__. An interview instrument was developed with the assistance of feed industry and university personnel who were experienced in the feed sales function of the feed industry. The instrument contained 40 competencies which appeared to be important for the performance of nine essential feed sales activities. The jury of 24 members were experienced in the performance of the sales function of the feed industry, or in conducting occupational research. Personal interviews were conducted and four sub-juries composed of six feed dealers, six sales training directors, six agricultural education researchers, and six business education researchers indicated whether or not each of the 40 competencies were essential for the performance of nine activities of the sales function in the feed industry. For the competencies rated as essential, the jury members also indicated at which loci each of the competencies could be taught. The frequency of the responses of the jury of experts were tabulated and the results were analyzed by the use of the chi-square test of significance and by the McQuitty Hierarchial Classification System.

Findings. Twenty-one of the 40 competencies were considered essential for the performance of the nine feed sales activities; seven competencies were considered essential for the performance of eight activities; six competencies for seven activities; three competencies for six activities; two competencies for four activities; and one competency was considered essential for the performance of three activities. The responses of the sub-juries were significantly different on 14 of 360 possible items.

Eighteen general competencies rated as essential by the jury members were considered to be possible for teaching at all six loci, and appropriate at five or six loci. The next group of seven competencies was considered by the jury members to be possible and appropriate at nine or ten loci. Eight competencies were considered by jury members to be possible and appropriate at six, seven, or eight loci. The last group of seven specific competencies were closely related to the particular feed company and were considered by jury members to be possible and appropriate at only the dealer and the on-the-job loci. The responses of the jury members were significantly different on 41 of 480 items for the six possible and the six appropriate loci at which the 40 competencies could be taught.

Very little disagreement between the four sub-juries was indicated by the chi-square tests of significance. The McQuitty Hierarchial Classification System indicated a relatively high level of agreement. The process appeared to be relevant for determining vocational competencies essential for the performance of nine sales activities by personnel in the feed industry and to a lesser extent for determining the loci at which the competencies could be taught.

5. AMBERSON, MAX LEE. A Study of Reimbursement Policies and Their Effect Upon Program Development in Vocational Education. Thesis, M.A., 1965, University of Minnesota, 75 pp., Library, University of Minnesota, St. Paul.

Purpose. To find out what reimbursement policies were being used in vocational and technical education in selected states and determine their relative effectiveness.

Method. A survey form was mailed to the Director of Vocational Education in each selected state. The three areas surveyed were: (1) the status of the state's vocational staff by division, (2) the state's progress in vocational education measured by change in numbers of programs, their enrollments and similarly by levels (high school, post-high school, adult) at which such instruction was given, and (3) program development was then compared with reimbursement policies employed by these states. A jury was used to identify reimbursement principles being used to determine their individual and aggregate effect on program development.

Findings. Several reimbursement policies were being used by states; however, only two major reimbursement principles were involved--the school foundation fund principle and the special fund reimbursement principle. Upon comparing the data, the school foundation fund principle showed the largest percentage increase in its effectiveness to increase enrollment while the special funds principle showed the largest percentage increase in schools offering vocational programs.

The school foundation funds principle showed the greatest percentage increase in the number of schools offering vocational programs in agriculture, technical, trade and industrial education and the largest percentage increase in numbers of programs and enrollments at the high school and post-high school levels. The special funds principle showed the largest percentage increase in numbers of schools offering vocational programs in distributive education and at the adult level.

6. ANDERSON, BENARD HAROLD. Guidelines for Planning and Conducting Cooperative Work Experience Programs in Vocational Agriculture. Thesis, Ph.D., 1966, The Ohio State University, 279 pp., Library, The Ohio State University, Columbus.

Purpose. To identify and evaluate guidelines for use in planning and conducting cooperative work experience in vocational agriculture programs providing training in off-farm agricultural occupations. Specific objectives were to compare the characteristics of teachers and programs in distributive, trade and industrial, and agricultural education with students placed in cooperative work experience, to determine selected situational factors and characteristics that influence the importance assigned to broad guidelines for planning and conducting cooperative work experience, and to compare the degree of importance assigned to activities and procedures associated with cooperative work experience by teachers from various vocational services.

Method. Each state supervisor of vocational agriculture was requested to submit the names of the teachers in his state who were conducting programs providing cooperative work experience in off-farm agriculture. Names of teachers from distributive and trade and industrial education were secured by requesting approximately 20 state supervisors in each of these services to submit the names of five teachers who were conducting outstanding cooperative work experience programs in their respective service. A survey instrument was developed which was structured around 18 guiding statements for planning and conducting cooperative work experience programs. Teachers were requested to record the importance of the guiding statements and procedural items for their implementation using a five-point scale. Survey instruments were returned by vocational agricultural teachers representing 44 states, distributive education teachers representing 20 states, and trade and industrial education teachers representing 17 states. A total or 317 teachers, or 83 percent, of the eligible respondents returned usable survey instruments.

Findings. Each of 18 guiding statements were rated as being of considerable importance by teachers from each of the three vocational services. Twelve of the statements received an "of extreme importance" rating by the combined groups of teachers. Of the procedural items identified to implement the guiding statements, 150 were rated as being "of considerable importance." Only two of the guiding statements showed a significant difference in ratings among the three groups of teachers.

Considerable variation was noted in the nature of the vocational agriculture departments providing cooperative work experience. For the most part, the cooperative programs in vocational agriculture had fewer students, were in smaller towns, were in smaller schools, provided less time to work during school hours, and showed much more variation in the length of the on-the-job training period than did the distributive and trade and industrial education programs. Six of the 20 situational factors identified significantly influenced three or more of the guiding statements. Whether or not a teacher utilized training plans seemed to have the most influence on the teachers' opinions of the importance of the guiding statements since this factor significantly influenced the ratings on one-half of the statements.

7. ANDERSON, EUGENE LAWRENCE. An Evaluation of the American Farmer Degree Selection Criteria Based on Subsequent Performance of the Degree Recipients in Minnesota. Coloquium Paper, M.A., 1966, University of Minnesota, 83 pp., Library, Department of Agricultural Education, University of Minnesota, St. Paul.

Purpose. To determine if individuals who hold the American Farmer Degree were different from others who had not received the degree after they had had an opportunity to become established in life.

Method. The sample of the study was composed of the 142 American Farmer Degree recipients in Minnesota from 1931 through 1960. A control group of State Farmers was selected who had attended the same high schools and had received the State Farmer Degree the same year in which the American Farmers had received the State Farmer Degree. The study was based on 74 American-State Farmer combinations. Questionnaires were sent to the sample and control group members to obtain data on current status of: occupation, net worth, community leadership activities, and level of educational attainment. Data on the highest level of FFA office attained was also gathered.

Findings. The American Farmers were engaged in farming to a much greater extent than were the State Farmers. The comparative results were highly significant statistically ($p < .005$). The economic status, measured in terms of current net worth, also showed that the American Farmers differed (were higher) at a highly significant level ($p < .001$). The community leadership participation was analyzed from several aspects. The overall participation of the American Farmers was highly significantly different from the control group ($p < .002$). A significantly greater ($p < .025$) number of American Farmers held community offices. There was no statistical difference between the two groups in the number of organizations in which memberships were held, in the number who held committee memberships, and in church membership. There was no statistical difference in the amount, type, or level of post-high school training obtained by the two groups. No significant relationship between nonfarm occupation and higher level FFA offices was found. The study indicates that the selection criteria for the American Farmer Degree are carried through into later life.

8. ANDERSON, OBER JAY. Competencies in Farm Credit Needed by Farmers. Thesis, M.S., 1966, Iowa State University of Science and Technology, 125 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the competencies in farm credit needed by farmers, to determine the factors which are related to the competencies needed and possessed by farmers, and to plan educational programs needed to teach the necessary competencies.

Method. A panel of 16 farm credit specialists was used to identify the competencies. A questionnaire was developed and submitted to a random sample of 177 members of the Central Iowa Farm Business Association and a random sample of 305 farmers from the 14 counties served by the Association. Usable replies were received from 117 association members and 94 farmers in the random sample. In addition to personal and farm credit information, respondents were asked to indicate the degree of each competency that they felt necessary for success and the degree of competence presently possessed. Competencies were scored on a scale from one to five points and were analyzed by the use of mean scores. Of the 43 competencies listed by the panel, 26 were classified as understandings and 17 as abilities.

Findings. Both association members and other farmers gave the highest overall scores in degree of understandings needed to (1) the importance of a good credit rating, (2) net farm income, and (3) the individual's repayment capacity. In the area of abilities needed, the highest scores were given to (1) keep complete and accurate farm records, (2) analyze and interpret farm records, and (3) distinguish between actual needs and mere desires. Respondents felt that they possessed less competence than they needed in all of the 43 competencies.

Comparisons among groups indicated the following differences between total scores for competence needed and possessed: (1) association members had wider differences than other farmers, (2) farmers with fewer years of experience had nearly the same scores as those with more experience, (3) operators of larger acreages had wider differences than those with smaller acreages, (4) renters had wider differences than owners, owner-renters, and members of a partnership, and (5) increased years of education tended to decrease the differences. Relationships between scores for selected control variables and for degree of competence needed and possessed in seven selected competencies were studied using correlation analysis. Highest correlation coefficients were found (1) between scores for the understanding possessed of capital and its relationship to other farming resources and scores for the ability possessed to evaluate available credit sources and (2) between scores for the ability needed to analyze and interpret farm records and accounts and for the ability needed to evaluate available credit sources.

From the data it may be inferred that members of farm record associations use farm credit more efficiently and to a greater degree than do other farmers in the area.

9. BAKER, JAMES K. Determining Employment Opportunities and Educational Needs for Animal Science Technicians in Ohio. Thesis, Ph.D., 1965, Ohio State University, 465 pp., Library, Ohio State University, Columbus.

Purpose. To develop curricula for technician training programs in animal science based on educational needs and employment opportunities in Ohio. To accomplish the purpose of the study an attempt was made to determine the need for animal science technicians in Ohio, to determine the major competencies required of technicians in animal science, to identify clusters of technical occupations in animal science, and to develop suggested curricula for the preparation of animal science technicians.

Method. Two questionnaires were used to gather data. The first instrument was designed to secure information concerning selected characteristics of the work force serving areas of animal science in Ohio. The second was concerned with determining the competencies needed by animal science technicians.

Findings. Employers of animal science firms, businesses, and institutions surveyed in this study indicated an immediate need for 173 more technical workers and projected employment opportunities for 378 full-time animal science technicians in Ohio by 1969. Seventy-five percent or more of the employers responding to this inquiry reported they preferred applicants between the ages of 21 and 43 with post-high school education, farm production training, and a farm background.

Two clusters of technical occupations were identified from an analysis of the work required and the competencies needed. Technical workers in both occupational clusters needed competencies in communications and mathematics and experience in and a talent for working effectively with people. Animal science technicians working as herdsmen, salesmen, fieldmen, inspectors, and artificial inseminators needed a broad background in agriculture and depth in their technical specialty in animal science. The major competence needed by technicians in this occupational cluster is a knowledge of animal diseases and parasites, livestock marketing, feeding, management, breeding and selection, agricultural economics, sales, agronomy, and business management. The second occupational cluster was made up of workers whose assignments were laboratory oriented. Laboratory technicians at the Ohio Agricultural Experiment Station and quality control technicians in milk marketing, meat packing, and dairy manufacturing are among the job titles in this cluster. The major competencies needed by technicians in this occupational cluster center around laboratory procedures, basic chemistry, business management, and an understanding of animal technology in the particular area in which they work.

10. BASU, ARUN C. A Study of Graduate Agricultural Students from India at Selected Land Grant Colleges and Universities in the United States. Thesis, Ph.D., 1966, University of Missouri, 363 pp., Library, University of Missouri, Columbia.

Purpose. To obtain information and insights about the appropriateness of graduate offerings in agriculture for Indian students enrolled at selected land-grant institutions in the United States.

Method. Data were obtained through mailed schedules from 314 respondents participating in graduate degree programs in 17 selected land-grant institutions. Personal interviews were held with 55 of the students at four institutions having larger graduate enrollments. The responses represented 85.1 percent of the population qualified for the study.

Findings. Nearly three-fourths of the students were working for the doctoral degree in 20 different areas of specialization directly or indirectly related to agriculture. Securing foreign exchange permits was a major pre-departure problem for a substantial number of the respondents. Home-sickness posed as a major problem for most of the subjects when they first arrived and this continued to be a problem during their stay. Less than one-fourth of the students encountered discrimination against them as India nationals. Industriousness, friendliness, courteousness, and the helpful nature of the Americans impressed the students. Characteristics of Americans that created unfavorable impressions were lack of personal warmth, unfamiliarity with overall situations of other nations, and the impression of superiority complex on the part of some individuals.

Satisfaction with graduate offerings were expressed by nearly 90 percent of the subjects. The students pursuing doctoral degrees were better satisfied with graduate offerings than those who were enrolled for Master's degrees and the difference was statistically significant. Even though nearly one-half of the subjects faced no difficulty in meeting course or degree requirements, the responses of the group as a whole revealed a significant relationship between the level of satisfaction with graduate programs pursued and difficulties faced in meeting academic requirements. A substantial number of the respondents apprehended difficulties in personal and professional life on returning to India. They expressed fears and worries mostly about administrative controls, lack of individual recognition, and inadequate opportunities for advancement.

11. BENNETT, WILLIAM C. Competencies in Soil Management and Use of Fertilizers Needed by Farmers. Thesis, M.S., 1965, Iowa State University of Science and Technology, 91 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the competencies in soil management and use of fertilizers needed by farmers and the extent that they possessed the competencies.

Method. A panel of 15 specialists developed a list of 46 competencies--24 related to soil management and 22 related to the use of fertilizer. The list in questionnaire form was submitted to 314 farmers who had been named outstanding farmers by the Iowa Junior Chamber of Commerce. Each farmer indicated the degree each competency was needed and possessed using a ten-point scale. Data from the first 200 usable questionnaires received were used in the study.

Findings. Mean scores for needed competencies ranged from 7.05 to 4.09. Mean scores for possessed competencies ranged from 6.37 to 3.56. The highest ranked competency for both the degree needed and degree possessed was the responsibility for maintenance of soil productiveness for future generations with a mean score of 7.05. The mean scores for each of the other top ten competencies were as follows: control of weeds and soil insects, 7.00; develop a farm plan for maximum use of soil resources, 6.93; economic principles in soil management, 6.88; balanced nutritional needs of crops, 6.78; safety in transfer of liquid and anhydrous fertilizer from bulk storage to the applicator, 6.78; the understanding of fertilizer nutrients, grades and labeling, 6.78; plan an economical fertilization program, 6.77; proper use of fertilizer in good soil management, 6.75; and economic principles of fertilization, 6.72.

The need for additional training for present farm operators is evident when the oustanding farmer group that was studied indicated a need for more competence than they possessed in 44 of the 46 competencies that were identified and evaluated.

12. BINGHAM, WILLIAM R. Agricultural Occupations Other Than Farming in Selected Kentucky Counties with Implications for Vocational Education. Dissertation, Ed.D., 1965, University of Kentucky, 250 pp., Library, University of Kentucky, Lexington.

Purpose. To secure answers to questions concerning agricultural occupations other than farming which are needed in adjusting present programs and developing new programs of vocational education to meet the occupational requirements of people entering and progressing in such occupations.

Method. Eight trade areas strategically located throughout Kentucky were selected. Five types of businesses were studied, all definitely agricultural in nature. In each area a sample of each type of business was drawn. Personal interviews were used to secure information in 111 businesses: 49 farm-supply, 30 farm-machinery, 24 nursery, 5 agricultural-chemical, and 3 livestock-marketing. One key representative of each business was interviewed regarding the nature of the business, employment opportunities, job descriptions, and educational requirements for job entry and advancement. Interviewees described each job title in their respective businesses. They indicated the activities and necessary competencies for each job title, educational level for job entry, and the preferred background of employees.

Findings. Most jobs identified use people with formal education at the high school level. Therefore, occupational orientation, guidance, and appropriate vocational education in the broad field of agriculture must be provided in high school. Additional vocational education in agriculture is also needed at the post-high school level. Jobs in agriculture are becoming more technical. Employers are demanding employees with specific skills. The number of people available for specialized education is limited in some local schools. In these cases technical programs to prepare people for job entry need to be provided by area schools.

Certain activity and competency areas are significant generally throughout agricultural occupations. These areas should be emphasized in vocational programs in high school to develop occupational competency with wide application. Some activity areas with wide application are contacting people, selling, using manuals, maintaining and operating machines, handling money, keeping records, and filing. Widely applicable competency areas include fertilizers, crop production, insect and disease control, nutrition and rations, operating tractors and machines. Farm experience is very helpful for successful entry and advancement in agricultural occupations. Provision should be made for boys and girls to benefit from their farm experience in vocational education and employment. Prior work experience is also very helpful. Students should be assisted in gaining meaningful work experience to develop desirable work habits.

13. BOUCHARD, ANDRE JOSEPH. Training Needs of County Agricultural Extension Agents in Quebec, Canada. Dissertation, Ph.D., 1966, The Ohio State University, 310 pp., Library, The Ohio State University, Columbus.

Purpose. To ascertain the kind of training the county agricultural extension agent in Quebec felt was needed in order to provide him with suitable knowledge, skills and abilities which would make him more competent and proficient in his job.

Method. Data were obtained from 163 of the 182 county agricultural extension agents in Quebec Province. A research questionnaire of 191 items was developed for collecting the data and was based upon the following categories of knowledge that a county agent should possess: (1) program planning, (2) psychological and educational principles, (3) performance of educational activities, (4) research and evaluation, (5) knowledge about the Extension Service, (6) social knowledge, and (7) technical subject matter. Spearman's rank correlation was used to ascertain the relationships between the rankings of the mean scores on the need for training in the training items and the seven areas of training by groups of age, tenure, and professional status.

Findings. All extension agents of Quebeck regardless of age, tenure, and professional status felt they needed more training in the area of program planning and less training in the area of technical subject matter. When the areas of training were compared, a lower degree of relationship was obtained between the training needs of the younger agents and the older agents than between any other age groups. However, there were more differences in training needs between the 0-to 2 and the 5-to 10-year tenure groups than between any other groups of tenure. There was a high relationship between the training needs among both professional status groups, although no great differences were obtained between the rank order coefficients in the areas of training when the training needs were compared on the basis of age and tenure groups.

14. BOUCHER, LEON WILLIAM. The Development of a Farm Business Planning and Analysis Instructional Program for Ohio Young Farmers. Thesis, Ph.D., 1964, The Ohio State University, 177 pp., Library, The Ohio State University, Columbus.

Purpose. To develop a farm business planning and analysis instructional program for Ohio young farmers.

Method. The study was of three years duration and was designed as an action research project. The ideas for an instructional program were identified with a pilot group of teachers and young farmers. These teachers conducted the new farm business planning and analysis program identified. An evaluation of the program was conducted one year later through questionnaires and interviews with teachers, young farmers, and agricultural agency personnel involved in the program.

Findings. The instructional areas identified as important in farm business planning and analysis were (a) farm inventory, (b) farm and family goals, (c) cropping systems, (d) livestock systems, (e) labor, (f) finance, and (g) records.

Teachers expressed greatest satisfaction from teaching these areas in the following order: (a) crops, (b) goals, (c) livestock, (d) finance, (e) labor, (f) records, and (g) inventory. Teachers expressed degrees of difficulty in teaching the areas in the following order with the most difficult first: (a) finance, (b) records, (c) labor, (d) livestock, (e) goals, (f) crops, and (g) inventory. The more difficulty teachers encountered with an area of instruction, the less satisfying it was to the teachers.

The farmers did not perceive the value of the seven areas in the same order as the teachers. The farmers rated the following areas of instruction in order of most value to them (a) records, (b) finance, (c) livestock, (d) crops, (e) goals, (f) labor, and (g) inventory. Eighty-five percent of the farmer enrollees rated the instruction as "very important" or "important." Ninety percent of the farmers indicated women should be enrolled in the instruction, while 70 percent of the programs actually enrolled farm wives. Six to ten farm couples were identified as desirable class size. Seventy-five percent of the enrollees indicated they would be willing to pay a course fee. The farm business planning and analysis program required more on-farm instruction than other Ohio young and adult farmer programs.

15. BOYER, WILLIAM ALFRED. The Mental Ability and Scholastic Achievement of Vocational Agriculture Students in Wayne County. Thesis, M.S., 1965, The Ohio State University, 96 pp., Library, The Ohio State University, Columbus.

Purpose. To consider the intellectual abilities and scholastic achievement of freshmen students enrolled in vocational agriculture as compared with their peers and to study the intellectual abilities and scholastic achievement of those students completing three years of vocational agriculture in Wayne County.

Method. Data were obtained from permanent records of 1,916 students attending six Wayne County high schools over a four-year period. I.Q. scores were used to indicate mental ability at both the freshmen and junior grade levels. Scholastic achievement of freshmen was determined by grades received in the required courses of English, math, and science, and one elective course. Scholastic achivement of juniors was determined by the junior year grade point average. The I.Q. score and grade achievement were used in correlating mental ability and scholastic achievement.

Findings. The I.Q. scores of both freshmen and junior vocational agriculture students were somewhat below that of other classmates but were equal to national norms. Freshmen vocational agriculture students achieved at a lower level in required courses than did classmates but achievement in elective subjects was similar. A usual relationship between I.Q. and grade achievement existed in both academic and elective subjects for freshmen. Scholastic achievement of vocational agriculture students as measured by their junior year point-hour average was somewhat less than that of classmates. However, the agriculture grade was somewhat greater than their point-hour average. Junior year grade-point averages and I.Q. scores were somewhat less correlated for vocational agriculture students than for classmates. The mean I.Q. score of junior year vocational agriculture students was somewhat lower than that for freshmen vocational agriculture students.

16. BRUCE, HERBERT H., JR. A Study of Factors Related to the Enrollment of High-School Boys in Vocational Agriculture in Kentucky. Dissertation, Ed.D., 1965, University of Kentucky, 187 pp., Library, University of Kentucky, Lexington.

Purpose. To determine why some boys who had an opportunity for supervised practice did not enroll in agriculture and why others who did not have an opportunity for supervised practice did enroll.

Method. Freshman and junior boys in high school, teachers of agriculture, and guidance counselors were asked to supply information for this study. Three questionnaires were used to collect the data. The first questionnaire was sent to all freshman and junior boys in 45 high schools. It was designed to determine if high school boys were enrolled in vocational agriculture who had opportunity for supervised farm practice. The second questionnaire was to determine why boys who had opportunities for supervised practice did not enroll in agriculture and why boys who did not have opportunities for supervised practice enrolled. The third questionnaire was to secure information on practices and procedures used by teachers of agriculture, guidance counselors, principals, and others in enrolling boys in agriculture.

Findings. Certain practices were followed in the schools which were successful in enrolling boys in agriculture who had an opportunity for supervised practice. These practices are related to a higher percentage of students enrolling in vocational agriculture: (1) boys who were interested in agriculture and could arrange for supervised practice were encouraged to enroll, (2) beginning students and their parents were visited and the program of vocational agriculture was explained to them, (3) the counselor, principal, teacher of agriculture, other teachers, and parents were involved in counseling boys, (4) information was secured on prospective students, (5) the schools' policies were more lenient in enrolling freshmen than juniors, (6) the final decision on enrolling boys was made by the teacher of agriculture, (7) counselors helped principals work out the class schedules, (8) the vocational agriculture program was publicized, (9) key people were used to contact prospective boys, (10) the potential ability of boys to benefit from vocational agriculture was determined, (11) boys interested in vocational agriculture who could arrange for a farming program, even though their fathers were not farming, were enrolled, (12) the teachers of agriculture were optimistic about the future of agriculture, and (13) more curriculums were available from which students could choose.

17. BRUM, HERBERT DUANE. Non-Farm Agricultural Employment Opportunities and Training Needs in Ohio. Thesis, Ph.D., 1965, 194 pp., Library, The Ohio State University, Columbus.

Purpose. To identify the number and characteristics of nonfarm jobs in Ohio requiring various levels of knowledge, skill, and ability in agriculture as necessary employee qualifications.

Method. This was a state study covering all nonfarm workers in Ohio. It was conducted in cooperation with the Ohio Department of Education, the Department of Agricultural Economics, The Ohio State University, and state and federal governmental agencies. A questionnaire was developed and pretested prior to being mailed to 7,847 different respondent firms, agencies, or organizations in the sample. The returned instruments were keyed to the Standard Industrial Code Index used by the census as a means of classifying firms. This permitted Ohio census data to be used as a projection base. Returns were received from 1,001 different firms with 43,453 employees.

Findings. A total of 57 different kinds of firms or agencies were identified as employing 165,262 nonfarm agricultural workers. This was 5.3 percent of all the 3,104,200 Ohio nonfarm workers at the time the study was completed.

It was found that the areas of agricultural competency needed by workers varied with the kinds of firms and levels of employment. Competency in the areas of food processing and horticulture was needed by 49,372 and 33,206 workers, respectively.

Of the 15,890 new nonfarm agricultural workers needed annually, six percent were at the professional and technical level, whereas almost 90 percent were at the sales, skilled, and semi-skilled, and service worker levels. The average annual rate of turnover for nonfarm agricultural workers was found to be 9.6 percent. Employers expressed no farm, rural or urban background preference for 88 percent of the nonfarm agricultural workers. However, in the case of hay, grain and feed, farm equipment, hardware, and farm and garden supply stores, a farm or rural background was preferred for many agricultural workers.

18. BUCK, GERALD L. An Analysis of Why Freshmen Who Enrolled in the College of Agriculture at North Dakota State University for the Fall Term of 1960 Dropped Out of School. Thesis, M.S., 1964, North Dakota State University, 51 pp., Library, North Dakota State University, Fargo.

Purpose. To determine reasons why freshmen drop out of the College of Agriculture.

Method. An information blank was mailed to freshmen who first enrolled in the College of Agriculture in September 1960 who failed to return the following year. This was supplemented with information gathered from permanent records in the Offices of Counseling and Testing, Admission and Records, and Dean of Agriculture.

Findings. The largest percent of dropouts, 18.3 percent, were graduates of high schools with enrollments of 100 or less. The dropouts were characterized by having the greatest proportionate number of nonparticipants in 4-H Club work and the FFA. Withdrawals were greatest at the end of the first quarter when 45.7 percent of all dropouts had withdrawn. First registration freshmen ranked higher in their respective high school graduating classes than they ranked on the achievement test (ACT). Nearly 40 percent of the dropouts ranked in the upper half of their graduating classes, whereas 80 percent of the nondropouts ranked in the upper half of their classes. Almost 75 percent of the dropouts had ACT composite scores below the fiftieth percentile, whereas slightly less than 55 percent of the nondropouts ranked below the fiftieth percentile on the ACT. Most dropouts had deficient honor point averages. Respondents listed parents, other family members, and friends as being most influential in helping them enroll in the

College of Agriculture. Respondents listed needed at home, discouraged because of grades, lack of funds, college experience not enjoyed, choice of vocation changed, and taking a job as most influential factors contributing to their withdrawal. About half of the respondents had re-enrolled in some type of formal training. Almost 40 percent of the re-enrollees had enrolled in a mechanics curricula.

19. BYRAM, HAROLD M. Development and Demonstration of Procedures for Evaluation of a Comprehensive Program of Vocational Education in the Public Schools. Staff Study, 1965, 57 pp., Bureau of Research Services, College of Education, Michigan State University, East Lansing.

Purpose. (1) To develop a generalized procedure for making an evaluation in a public school system; (2) to utilize and further test the recommendations of the Michigan Vocational Education Evaluation Project study in light of local community conditions; and (3) to assist selected public school systems to evaluate and replan their programs of vocational education.

Method. Three Michigan schools were selected to cooperate in the study. These were systems offering a broad program having administration, faculty, and citizens interested in conducting an evaluation and having adequate leadership for the project. Each school appointed an administrator as director of the local evaluation project. A consulting committee was utilized by the state project director. These schools organized staff and advisory committees. They developed and/or tried out follow-up studies, placement procedures, needs studies, curriculum analyses, and relations with the guidance program. They participated in open-house visits to each school and engaged in self-evaluation conferences with consultants.

Findings. A generalized procedure for evaluation of local programs was developed and described, "Evaluation of Local Vocational Education Programs--A Manual for Administrators, Teachers and Citizens," (Bureau of Research Services, East Lansing, Michigan; College of Education, Michigan State University, 81 pp., September 1965). The recommendations of the Michigan Vocational Education Evaluation Project that were deemed appropriate were tested, and in some instances demonstrated. All three schools evaluated their programs and made significant changes in them. Several evaluative instruments were developed.

20. CARLSON, KEITH RANSOM. Competencies Needed by Farm Credit Agency Employees. Thesis, M.S., 1966, Iowa State University of Science and Technology. Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the competencies needed by farm credit agency employees. These competencies were defined as understandings or abilities that are needed by successful employees of Production Credit Associations, Federal Land Bank Associations, and outside representatives of state and national banks in Iowa.

Method. A panel was used to select the competencies that were included in the questionnaire. Twelve understandings and 21 abilities were combined with several control items to constitute the questionnaire. The questionnaire was mailed to all of the Iowa banks that employed outside farm representatives, to all

Production Credit Association managers, and to managers of the Federal Land Bank Associations in Iowa. Of the 33 competencies used, 13 were of a definite agricultural origin, while the remaining 20 were of a more general credit nature. The first 100 usable questionnaires were used out of the 133 sent out. The men who filled out the questionnaires rated each competency by the degree they felt each was needed and the degree they possessed each competency.

Findings. The ten competencies that ranked the highest in need were: (1) recognize poor and good financial management, (2) converse easily with farmers, (3) determine repayment ability and desire, (4) recognize ability to handle credit, (5) set up loans so that they fit the individual farm, (6) set basic credit guidelines used for loan analysis, (7) evaluate character, (8) work basic arithmetic, (9) understand loan security (chattel and real estate), and (10) advise farmers how to use credit.

21. CARSTENS, HAROLD L. Opportunities for Beginning Farmers in the Alta Community School District. Field Study, M.Ed., 1965, Iowa State University of Science and Technology, 68 pp., Department of Education, Iowa State University of Science and Technology, Ames.

Purpose. To discover the opportunities for establishment of beginning farmers of Alta (Iowa) Community School District.

Method. Information was obtained through personal interviews and the use of a schedule form. Ninety percent of the farm operators in the school district were interviewed.

Findings. The mean age of farm operators in the district was approximately 45 years. The 53 operators who were 56 years or older will probably retire in the next ten-year period. Nearly 83 percent of the operators were not employed off the farm. There were 64 operators who indicated they plan to retire from farming for one reason or another during the next ten-year period. Not considering deaths, 6.4 replacements would be needed if the number of farms remains constant. Opportunities for employment as a hired hand appear very limited as only eight operators used hired help with nine or more man-months during the year.

It was estimated that approximately seven operators would leave the farms each year for the next ten years. Because of farm consolidation, about 3.5 farms would be eliminated, leaving about 3.5 replacement farmers needed each year. It was expected that there would be approximately six young men graduating from vocational agriculture each year in the district.

22. CHRISTIANSEN, JAMES EDWARD. The Adoption of Educational Innovations Among Teachers of Vocational Agriculture. Thesis, Ph.D., 1965, The Ohio State University, 205 pp., Library, The Ohio State University, Columbus.

Purpose. To determine the relative influence exerted by different sources affecting the adoption of specific educational innovations among experienced teachers of vocational agriculture in Ohio who were identified as members of specific innovation-adopter categories.

Method. The study was based on data received from 101 experienced teachers of vocational agriculture making up 38.8 percent of the experienced teachers in Ohio who had taught three or more years and thus had had an opportunity to be influenced by and to utilize sources of educational innovations other than those inherent primarily in the pre-service program of teacher education. A descriptive survey utilizing group interview techniques was the procedure used for gathering data. Teacher-innovativeness was measured by means of an adoption scale involving the length of time it took a teacher to adopt an innovation and the number of innovations adopted that could have been adopted.

Findings. The following are the major conclusions drawn.

Experienced teachers are influenced by different sources at the awareness stage, the interest stage, and the adoption stage in the innovation-adoption process. The more innovative the teacher is, the greater the use he is likely to make of impersonal sources of information, nonmandatory sources, and sources outside of agricultural education. He is likely to have obtained a greater amount of formal education since initial certification, is likely to have invested more money in professional growth, to have visited a greater number of other departments of instruction on his own initiative, to have attended a greater number of nonlocal professional meetings, and is more likely to have been influenced by the cooperating teacher under whom he did his student teaching than the less innovative teacher. The less innovative teacher is not as likely to adopt a given practice if he perceives that more training in the use of the practice is needed. He is also influenced by his peers to a greater extent than is the more innovative individual.

The broad generalizations concerning the adoption of innovations by individuals derived from research studies in other disciplines were generally applicable to this study's population.

23. CHRISTENSEN, VIRGIL EARL. Factors Influencing Acquisition and Retention of Learning in Vocational Agriculture. Thesis, Ph.D., 1964, University of Wisconsin, 489 pp., Library, University of Wisconsin, Madison.

Purpose. To determine the effect individual differences, differences in home-farm siaution, and differences in a student's supervised farming experience program had upon acquisition and retention of learning in vocational agriculture classrooms.

Method. In August 1961, a random sample of ten percent of all Wisconsin high schools teaching vocational agriculture was selected. A pretest post-test, retention test design was followed using as subjects the 481 sophomore students distributed throughout 33 Wisconsin high schools. The procedure followed was first, to determine each student's degree of experience with and ownership of swine, obtain information about their particular individual differences, home and supervised farming differences; next, have them participate in a classroom instructional unit on swine care and management; then, measure their gain after completion of the unit and lastly, measure their retention of swine knowledge after a 150-day retention period. The teaching objectives investigated included: ability to learn and retain facts and figures, ability to learn and retain scientific and technological information and the ability to learn and apply the techniques of problem solving.

The following 15 classifications of students, with several stratifications in each, were used as the independent variables: ownership or nonownership of swine, Henmon-Nelson Test of Mental Ability raw scores, Clanin Experience Scale raw scores, interest in farming, number of swine owned, student's favorite farm animal, student's career preference, major income enterprise on home farm, size of home farm in acres, opportunity the home farm afforded the student to farm, size of home farm swine enterprise, student's and father's rank of swine as a favorite farm animal, amount of time student's father worked off the farm, and the student's parents' attitude toward the vocational agriculture program. The basic procedural design in the study was for the researcher to manipulate the independent variable (student classifications) and observe how the dependent variable (achievement test scores) changed.

Findings. The major findings were that: (1) student ownership, per se, without qualification as to number owned, is not a meaningful expression where acquisition and retention are concerned, (2) experience had greater influence on acquisition than on retention, (3) level of occupational aspiration was a reflection of ability and an influential factor in learning in the vocational agriculture classroom, (4) aptitude had greater influence on total classroom acquisition and retention than did any other factor considered, (5) a direct relationship existed between the amounts acquired and retained and parental attitude toward the school vocational agriculture program, (6) a good to excellent opportunity to farm appeared essential if the student was to approach maximum classroom learning and retention, (7) acquisition and retention of fact and figure information depended more upon prior experience than upon student aptitude, (8) acquisition and retention of scientific and technological information depended more upon aptitude than upon prior knowledge of other experience factors, (9) problem-solving ability was measured in this study depended more upon student aptitude level than any other factor considered, (10) the largest measured gains of knowledge were made in facts and figures, (11) the highest measured retention was of scientific and technological information and in problem-solving scores.

24. CHRISTY, JAMES RAYMOND. Competencies in Farm Business Analysis Needed by Farmers. Thesis, M.S., 1966, Iowa State University of Science and Technology, 130 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the competencies in farm business analysis needed by males engaged in farming, to determine the degree of competency needed and possessed, and to indicate some implications for future planning of educational programs for farmers.

Method. A panel representing farmers, professional farm managers, bankers, a fieldman of a farm business association, and an extension specialist in agricultural economics identified 40 competencies needed for success in farm business analysis. A questionnaire was developed from this list and submitted to a random sample of 197 Central Iowa Farm Business Association members and a random sample of 333 farmers in the same 15 counties served by the Association. The farmers were asked to rate the degree of competence needed for business analysis and the degree of competence that they presently possessed. Competencies were scored on a scale of one to five points and were analyzed by the use of mean scores. Personal information was used in stratifying the respondents. Usable forms were received from 252 farmers. Of these, 142 were from association members and 110 were from farmers in the random sample.

Findings. The Association members rated 83 percent of the competencies as "much competence needed," whereas the farmers in the random sample scored 55 percent of the competencies in the same range. Highest overall scores for degree of competence needed by both groups were found to be for (1) the ability to file accurate income tax returns, (2) ability to take time for bookkeeping and analyzing your business, and (3) ability to recognize the probability of profit from various feeding and cropping programs. Other high abilities needed according to mean scores of Association members were the ability to distinguish between actual needs and mere desires and the ability to be willing to change managerial practices. The farmers in the random sample rated the ability to figure cost of borrowing money as one of the highest competencies needed. Respondents in both groups indicated that farmers possessed less competence than they needed in all of the 40 competencies.

The data indicated that members of the Central Farm Business Association are younger farmers with higher educational attainment, operated larger acreages, tended to be owners of land, rented additional land to obtain volume, participated in more adult education programs, and had higher participation as youths in 4-H and vocational agriculture groups than did farmers in the random sample.

25. DETTMANN, EMERON PAUL. Competencies in Agricultural Mechanics Needed by Vocational Agriculture Instructors. Thesis, M.S., 1965, Iowa State University of Science and Technology, 106 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine competencies in agricultural mechanics needed by vocational agriculture instructors, the degree of competence possessed by the instructors and the place of acquiring competencies.

Method. A list of competencies was developed by a panel of outstanding vocational agriculture instructors and revised by a panel of College of Agriculture specialists. The revised list was mailed in questionnaire form to 225 experienced Iowa vocational agriculture instructors. Instructors indicated the degree each of the 56 competencies were needed and possessed on a ten-point scale and whether the competence was acquired on a farm, in vocational agriculture, in college, or on the job. Instructors were stratified into groups A, B, C, or D according to teaching competency.

Findings. Competencies involving safety factors and the correct us of all tools were given high competency needed scores by teachers. Other high ranking needed competencies were: figuring a bill of materials; constructing and repairing buildings and equipment; electrode selection; and operating principles of farm tractors and machinery, including maintenance and adjustment. Ranked lowest by the instructors on the basis of need were in descending order, installing copper tubing; flaring and soldering joints; selection and caring for rope; and doing forge work. The most important source of acquiring competencies was college while on the job ranked second.

26. DILLON, ROY DEAN. Comparison of Certain Abilities Needed by Workers in Licensed Nurseries and Licensed Ornamental Horticulture Businesses. Thesis, Ed.D., 1965, The University of Illinois, 255 pp., Library, The University of Illinois, Urbana.

Purpose. To determine whether separate and specialized agriculture courses are needed for workers in nurseries and for workers in ornamental horticulture businesses. An additional purpose was to determine the content of these courses.

Method. The study involved three major tasks: (1) the development of a questionnaire containing 100 items of knowledge in agriculture in the four areas of horticulture, agricultural chemicals, floriculture, and soils; (2) interviewing of head workers in the four job titles of general director, salesman, supervisor, and field worker from a random sample of 20 licensed grower nurseries and from a random sample of 20 licensed horticulture retail and landscaping businesses in northeastern Illinois; and (3) the statistical analysis of the data for each of three hypotheses. Statistical techniques used were the "z" test and analysis of variance.

Findings. In testing the first major hypothesis pertaining to whether significant differences existed in the kinds of knowledge needed by workers with comparable job titles in licensed nurseries and in licensed ornamental horticulture businesses, the "z" test indicated significant differences for: (1) ten of the 100 items of knowledge for general directors; (2) 12 of the 100 items of knowledge for salesmen; (3) two of the 100 items of knowledge for supervisors; and (4) four of the 100 items for field workers. The number of items of knowledge needed by general directors, salesmen, supervisors, and field workers ranged from 84 to two according to the job title and the type of horticulture business.

The second major hypothesis was concerned with whether significant differences existed among the means of groups of items of knowledge across the four job titles studied in licensed nurseries. The "F" statistic revealed a significant difference for 17 of the 19 groups of items of knowledge studied.

The third major hypothesis investigated whether significant differences existed among the means of groups of items of knowledge across the four job titles studied in licensed ornamental horticulture businesses. The "F" statistic revealed significant differences for all of the 19 groups of items studied. For both the second and third hypotheses, it was concluded that differences in the level of ability needed by general directors, salesmen, supervisors, and field workers probably represented differences due to the way the workers used their agricultural knowledge in their jobs.

The content for a total of 13 basic courses or units was recommended for persons preparing to enter horticultural jobs. The content for a total of two specialized courses or units was recommended for persons in one, two, or three of the job titles studied.

27. DILLON, ROY D. and CAIN, PAUL S. Employment Opportunities and Usable Agricultural Skills in Non-Farm Agricultural Occupations in Appalachia. Staff Study, United States Office of Education Contract No. OE-5-85-028, 1966, Morehead State University, 174 pp., Library, School of Applied Sciences and Technology, Morehead State University, Morehead, Kentucky.

Purpose. (1) To determine employment opportunities for present and emerging nonfarm agricultural occupations in 28 eastern Kentucky and 10 southern Ohio counties; (2) to determine clusters of competencies required for a selected number of these jobs; (3) to determine needed post-high school educational programs to prepare workers to enter or progress in technician level occupations in agriculture.

Method. The study involved (1) the development of a questionnaire to obtain information about (a) the functions of each firm and the kinds and numbers of workers in present and anticipated job titles in the firm, (b) the specific activities in which workers engage, and (c) the knowledge workers use in their jobs; (2) interviewing of a selected sample of 284 business firms in the region of study; (3) projection of the data to determine (a) the total number of workers currently employed in the types of businesses defined, (b) the total number of workers currently employed in agriculturally-oriented jobs, (c) the total number of agricultural technicians currently employed, (d) the functions of businesses studied, (e) the additional number of agricultural technicians needed in the next three- and five-year periods, (f) the educational requirements, work experience requirements, and age limitations for agricultural technician jobs; (4) the determination of principal-axis factors using a factor-analysis computer program with the varimax rotation technique for 92 activity and knowledge variables, using the data for 126 different agriculturally-oriented job titles; (5) the determination of principal-axis factors for the 126 different agriculturally-oriented job titles using the same statistical procedure; (6) the determination of principal-axis factors for 92 activity and knowledge variables within each of ten identified job-title clusters.

Findings. Data were obtained on a total of 736 job positions in the 284 businesses in the sample. Of the 736 positions, 306 were defined as agriculturally-oriented jobs representing 126 different vocational and technical job titles. Of the 126 different agriculturally-oriented job titles, 67 titles were defined as agricultural technician job titles. Five major conclusions were made:

Estimates derived from the sample data indicated that (a) 40 percent of all workers employed in nonfarm agriculturalbusinesses need some knowledge and skills in agriculture, (b) 16 percent of all workers employed in nonagricultural businesses that may employ agricultural workers need some knowledges and skills in agriculture, (c) of every ten potential job opportunities for agricultural workers, six were in the Kentucky and four were in the Ohio region of study, (d) two and one-half times more agricultural workers with high school vocational level training will be needed than agricultural technicians with post-high school training to take entry level positions in the next five years, (e) most of the business firms interviewed were multifunctional, and workers in job titles in the smaller firms tended to hold jobs that were multifunctional in nature, (f) purchasing, service, and retailing were the predominant functions among the businesses studied, (g) the rate of turnover was highest in businesses having the most part-time workers, (h) employers reported an expected 40 percent increase in the number of employees needing technical competencies in agriculture in the next five years, and (i) employers had been willing to hire untrained persons under 20 years of age and train these people in technical skills on the job, but indicated they would rather hire and pay a higher wage to trained technical workers if available.

It was possible to determine the general competency areas for entry and advancement by workers in jobs needing agricultural knowledges and skills and to group these worker activities and knowledges into clusters so that general competency areas could be identified.

It was possible to determine clusters or families of agricultural-technical and agricultural-vocational job titles based upon the workers' responses concerning activities and knowledges used in their jobs.

It was possible to determine more specific competency needs of workers within each cluster or family in agricultural technical and vocational job titles.

It was possible to determine a general curriculum pattern but it was recommended that more detailed information be obtained before units of instruction could be planned.

28. EHRESMAN, NORMAN DONALD. An Experimental Study to Evaluate the Effectiveness of Certain Structured Teaching Materials. Thesis, Ed.D., 1966, University of Illinois, 80 pp., Library, University of Illinois, Urbana.

Purpose. To ascertain the relative effectiveness of structured, printed instructional materials as compared to unstructured, printed instructional materials.

Procedure. Two groups of ten schools each were randomly selected from all the schools in Illinois which offered vocational education in agriculture. One group of ten schools was randomly designated as the experimental group and the other group of ten schools was designated as the control group. The teachers of agriculture in all 20 schools were asked to teach a unit on agricultural cooperatives and administer a pretest and post-test. The only difference between the two groups was that the teachers in the experimental group had access to the experimental variable and the teachers in the control group were denied that variable. The experimental variable was a structured source unit designed to assist teachers in organizing and teaching a unit on agricultural cooperatives. The effectiveness of the experimental variable was determined by testing the pupils' knowledge of agricultural cooperatives at the close of the unit of instruction.

Findings. The difference in mean post-test scores of pupils taught by the teachers in the experimental group and the pupils taught in the control group was not significant at the .05 level when tested with the "t" test.

The reactions of the teachers using the structured source unit were favorable. The teachers in the experimental group, those using the structured source unit, expressed a desire to have similar source units prepared for them on other subjects. Providing teachers with structured source units, containing teaching outlines, did not result in increased pupil achievement nor did it result in decreased pupil achievement. Structured source units may be a valuable aid to teachers because of the time saved during the planning and preparation for a unit of instruction.

Teachers of vocational education in agriculture will include new subject matter content in their courses if instructional materials are available. Preparation of structured instructional materials may motivate teachers to upgrade their courses and include new content instead of continuing to teach obsolescent subject matter. Maximum benefits from structured instructional materials may not be realized unless teachers are aware of the materials and are given assistance in utilizing the materials. The opinion of the researcher is that it is not enough to prepare materials for teachers. Teachers need to be informed of the assistance the materials will provide and motivated to make effective use of the materials.

29. FIELD, RALPH GLENN. Contestants in the Kansas Agriculture Judging Contests. Master's Report, 1966, Kansas State University, Library, Kansas State University, Manhattan.

Purpose. To study selected contestants to determine the training of the contestants and to secure the contestant's evaluation of judging contests.

Method. The data were secured through the use of a questionnaire mailed to the state winning contestant and a teammate of his in five contests--livestock, dairy cattle, poultry, and agronomy for the years 1961-65 and horticulture for the years 1963-65.

Findings. Sixty-eight percent of the winning contestants and 73 percent of their teammates were in college working on a degree or had completed their degree. Of these, 71 percent of the winning contestants and 67 percent of their teammates were preparing for ranching, farming, or an agriculturally related occupation.

Over 84 percent of the winning contestants and 80 percent of the teammates were in the twelfth grade at the time of competing in the state contest.

Sixty-one percent of the contestants rated the value of the contests in which they judged as very high. Only one percent of the winning contestants and 12 percent of their teammates rated any contest as very low. The area marked most by the winning contestants in determining how their training experience helped them prepare for a vocation was that it provided necessary leadership training. The FFA or high school vocational agriculture classes were the leading area in providing these experiences with judging activities being marked as the first choice of 84 percent of the winning contestants and 86 percent of their teammates. The most influencing factor in helping the contestants choose their proposed vocation was their teachers with the vocational agriculture teacher being named most frequently. Of the seven FFA districts in Kansas, over one-half of the winning contestants came from the southeast district. Two of the districts did not have any winning contestants.

30. FISCUS, KEITH EUGENE. A Comparison of Certain Knowledges in Agriculture Needed by Workers in Farming, in Grain Elevator Businesses, and in Agricultural Equipment Businesses. Thesis, Ed.D., 1965, University of Illinois, 330 pp., Library, University of Illinois, Urbana.

Purpose. To determine the vocational and technical education in agriculture needed for prospective workers in farming, in grain elevator businesses, and in agricultural equipment businesses.

Method. A questionnaire was developed to ascertain the needed knowledges in agriculture. The questionnaire items were categorized into the following knowledge areas: (1) livestock, (2) crops, (3) soil fertility and management, (4) agricultural resource conservation, (5) agricultural mechanics, (6) agricultural power and equipment, and (7) agricultural business management. Twenty workers employed in each of the jobs of (1) farm managers, (2) grain elevator managers, (3) grain elevator operators, (4) grain elevator salesmen, (5) grain elevator deliverymen, (6) agricultural equipment managers, (7) agricultural equipment mechanics, (8) agricultural equipment salesmen, and (9) agricultural equipment set-up men were interviewed by the investigator. Businesses in which the workers were employed were randomly selected from farming, grain elevator, and agricultural equipment businesses in a 14-county area of East Central Illinois. Each of the 180 agricultural workers interviewed assigned a score to each of the items on the questionnaire, using a five-point, continuous scoring scale. Additional descriptive data were also collected from each of the 180 interviewees.

A quasi-split-plot design analysis of variance test was used to determine whether or not there were significant differences between the mean scores for workers in the primary jobs and between the mean scores for the agricultural knowledge areas. Duncan's Multiple Range Test and the t-test were used to identify the (1) groups of workers with significant mean scores and (2) significant agricultural knowledge areas and the significant items of knowledge needed by workers employed in nine job categories in three agricultural businesses.

Findings. The analysis of the data showed that: (1) workers in each of the four primary jobs in grain elevator businesses needed differentiated knowledges within and among the seven agricultural knowledge areas, (2) workers in each of the four primary jobs in agricultural equipment businesses needed differentiated knowledges within and among the seven agricultural knowledge areas, (3) workers in comparable jobs, regardless of the kind of agricultural business in which they were employed, needed differentiated knowledges within the seven agricultural knowledge areas, (4) workers in farming, in grain elevator businesses, and in agricultural equipment businesses each needed differentiated knowledges within and among the seven agricultural knowledge areas, and (5) workers in grain elevator businesses needed different knowledges than the workers in the agricultural equipment businesses in the seven agricultural knowledge areas. Thirty-eight instructional units were recommended for prospective workers for nine job categories in three kinds of agricultural businesses. It was recommended that workers in seven of the nine agricultural job categories needed post-high school and continuing education in agriculture.

31. FRANCIS, EUGENE VANDERHOOF. A Course of Study for On-the-Farm Instruction in Farm Management and Farm Business Analysis. Thesis, M.A., 1966, University of Minnesota, 193 pp., Library, Institute of Agriculture, University of Minnesota, St. Paul.

Purpose. To develop a complete program of on-the-farm instruction in farm management for farm families that can be used as a guide for the vocational agriculture instructor when developing the local farm business analysis program and as a guide for administrators, boards of education, and laymen when determining the usefulness and practically of implementing such a program in their school.

Method. A series of units of instruction were prepared for use in a program of farm management instruction on the farm. Material contained in these units would be used during regularly scheduled consultation visits made by the vocational agriculture instructor to families enrolled in the management program. Each unit provides instructional material for one or more visits. The subject content of each unit was arranged to correlate with the progression of a family through a planned farm management program, the seasonality of various farm tasks and to coincide with courses of study previously developed for classroom instruction.

Helpful references were included. Supplementary data, worksheets and forms are provided also.

Findings. The material presented in each unit should prove particularly valuable to instructors entering the field of farm management instruction when developing the local on-farm instruction program. Established instructor's will find it helpful in organizing a more meaningful instructional program and as a source of suggested teaching aids and on-farm activities. It is recommended by the writer, that regional specialist positions be created in area schools or area extension offices. Persons employed in these positions would provide technical data and assistance when contacted by the local instructor. They would also be available to provide in-service training sessions in specialized areas for instructors. The writer further proposed that vocational agriculture coordinators in the area vocational-technical school organize small group seminars in which instructors can discuss procedures in teaching farm management and can exchange ideas and teaching aids.

32. FREEMAN, JOSEPH. The Farm Management Account Book. Thesis, M.S., 1966, University of Minnesota, 91 pp., Library, Agricultural Education Department, University of Minnesota, St. Paul.

Purpose. To develop a simple and personalized farm account book to be used in the expanding program of farm management in vocational agriculture.

Method. A study of farm account books was made. A list of objectives was formulated to form guidelines for the development of a new farm account book. The first step in the development of the account book involved both farmers and the investigator in designing sections of the book. After the initial compilation, the book was presented to farmers and a group of adult farmer instructors for criticism. The tentative draft of the account book was distributed to farmers and instructors for study and criticism.

Findings. The list of objectives developed as guidelines for the development of the farm account book were: the book must be oriented to the needs and wants of farmers; the book must provide the same analysis information as the Minnesota Farm Account Book; the account book must lend itself to electronic processing;

the book must facilitate the process of cost accounting; and it must be enclosed in a loose-leaf cover to provide a customized book for the farmer. The Farm Management Account Book resulted and is being used by 300 farmers who are members of the farm management program of 34 instructors in the northwestern part of Minnesota. The evaluations of farmers indicate that the book is simpler and better meets their needs.

33. FROEHLICH, LOREN H. Factors Related to the Tendency of the Iowa State University Agricultural Education Graduates to not Enter or to Leave the Vocational Agriculture Teaching Profession. Thesis, M.S., 1966, Iowa State University of Science and Technology, 150 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To identify possible environmental factors which may have a tendency to influence agricultural education graduates to not enter or to enter and leave the vocational agriculture teaching profession and to identify the reasons for leaving the vocational agriculture teaching profession as given by graduates who left teaching.

Method. Questionnaires were sent to 1,117 agricultural education graduates from Iowa State University. Responses were obtained from 823 nonteaching agricultural education graduates and used in this study. Data were obtained from the questionnaire and the graduate's permanent record in the Admissions and Records Office. Income figures were adjusted in order to compare incomes of different time periods.

Findings. The data revealed that the graduates who had taken a vocational agricultural curriculum in high school had a somewhat longer tenure in vocational agriculture teaching. Graduates who had never taught had some of the highest high school and college grade point averages with averages of 2.82 and 2.72, respectivwly. Only rarely were these grade point averages exceeded by graduates who had entered vocational agriculture teaching and then quit.

Four hundred and six graduates (50.8 percent) reported vocational agriculture teaching as their first employment area. Factors having the greatest influence on the nonteaching graduate's decision to enter vocational agriculture as his first employment were: felt best trained in this area, working closely with people, and salary. Owning of home and evenings free had the least influence. When mean scores were compared for the first and 1964 employment areas for salary, freedom and independence of the job, security, felt best trained in this area, own my own home, and wife happy with line of employment, it was found that the 1964 scores were much higher and reflected increased influence of these factors upon the nonteaching graduates' choice of 1964 occupation.

Factors influencing agricultural education graduates to leave vocational agricultural teaching were lack of advancement opportunities, salary, too many evening responsibilities, and long hours.

34. GASIM, OSMAN A. Informational and Operational Relationships Between the Vocational Agriculture Departments and the Farmers in Rock County. Seminar Report, M.S., 1965, Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Purpose. To determine the informational and operational relationships between the farmers in Rock County and vocational agriculture departments in that county.

Method. The mailed questionnaire was used for collecting the data. A randomly selected sample of farmers was sequentially picked from the total farming population of Rock County as listed in the Agricultural Stabilization and Conservation Service Register. Analysis of data was done on a simple percentage basis.

Findings. Farmers' participation in the different phases of the program was limited. The vocational agriculture teacher was known only to a small number of farmers. A large number of farmers had no opinion on such issues as clientele to be served by the program, the importance of the program, the job training orientation, and the teacher's time allocation for the different phases of the program. Farmers no longer felt that the program should be limited to farmers only. Farmers wanted to see more emphasis on future use of such communication methods as radio and farm visits.

35. GRASSE, ALVIN K. Factors Related to Occupational Choices of Iowa Mennonite High School Male Graduates. Field Study, M.Ed., 1966, Iowa State University of Science and Technology, 62 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the factors which influenced the occupational choice of the male graduates of the Iowa Mennonite High School.

Method. Information was obtained through the use of a questionnaire sent to all male graduates of the Iowa Mennonite High School for the period of 1953 to 1960. Questionnaires were returned by 144 graduates.

Findings. Data indicated that 19.4 percent of the graduates chose farming as their occupation; 20.8 percent of the graduates chose farm-related occupations; and 49.3 percent chose occupations not related to farming. Fifty percent of the graduates remained in their home community. Three percent remained in the State of Iowa and 47 percent moved out of the state.

Approximately 64 percent of the graduates reported they had done little or no planning for their occupations at the time of high school graduation. Of the 129 graduates who were established in occupations at the time the survey was taken, 34 percent were self-employed. Two-thirds of the graduates who were self-employed were in agricultural occupations. Sixty-four percent of the graduates had received little or no information from their parents concerning the occupation they were engaged in at the time the survey was made. Eighty-two percent of the graduates who had selected agricultural occupations reported that they had received much information from their parents.

36. HANKEL, WAYNE L. The Educational Interests of Young Farmers in Steele County, North Dakota. Thesis, M.S., 1963, North Dakota State University, 69 pp., Library, North Dakota State University, Fargo.

Purpose. To determine the educational interests of young adults in Steele County (North Dakota).

Method. The principal source of data in the study was an informational blank distributed to male farm residents between the ages of 18 and 30.

Findings. The ranking of the educational areas by the respondents indicated their greatest interest was in the area of farm business economics, followed by agricultural engineering, family business and personal development. The least interest was shown in public affairs and horticulture. Within the area of farm business economics, the greatest interest was in farm management principles. Seventy percent of the respondents indicated they would be interested in attending educational classes. The median distance respondents indicated a willingness to travel to attend classes was 10 to 25 miles. Those who earned their entire income from farm sources were willing to travel a further distance than those who earned a portion of their income from the farm. Interest in attending classes increased with the level of formal schooling completed by the respondent.

37. HANSON, ROLAND J. Special Young and Adult Farmer Programs in Wisconsin. Seminar Report, M.S., 1965, 85 pp., Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Purpose. To analyze special programs of young and adult farmer education in Wisconsin. Major segments of the study dealt with factors pertinent to attendance at classes.

Method. The group studied consisted of 18 special young and adult farmer programs in Wisconsin. Material was gathered by the use of a written questionnaire completed by the 18 instructors and the tabulation of statistical information supplied by the instructors on the 1963-64 final reports on file in the office of the State Board of Vocational and Adult Education.

Findings. All instructors used a long-term plan of three to six years in setting up their programs. Only two of the school districts charged a membership fee of enrollees in the program although six of the instructors believed that a fee should be charged. Ten of the programs were served by advisory councils consisting of 3 to 15 people, the majority of whom were members of the program. The major problems confronting the instructors centered around course of study selection and class attendance.

The most preferred method of determining units of study was to survey the farmers' needs. Personal contact was rated by the instructors as being the most used and most valued method of obtaining enrollment in the program. Personal contact, letters and post cards, reviewing course outline at first meeting, and old members recruiting were the four methods most used and of the most value in maintaining attendance at classes. The methods used most in arranging for on-farm instruction were farmer requests, a yearly schedule, and a monthly schedule. The most widely used evaluation methods or agencies were self-evaluation, State Board of Vocational and Adult Education, and school administration.

Of the 926 farmers enrolled in the eight major courses of study offered by the 18 programs during 1963-64, 82.6 percent attended at least 60 percent of the meetings. The average attendance per program ranged from 59.33 to 89.62 percent with four programs averaging above 81 percent and five programs below 69 percent. There were 15 percent more full-time instructor programs in the high attendance group than in the low attendance group. The programs in the high attendance group had been in operation an average of 1.6 years longer than the low attendance programs. The instructors of the high attendance programs were, on the average, six years older and had an average of about eight years more teaching experience than the instructors of the low attendance programs. The average class duration in the high attendance group was 8.1 months as compared with 10.4 months for the low group. Instructors in the high group conducted an average of about six-tenths more farm visits per enrollee than those in the low attendance group.

38. HANUMANTHAPPA, HANUMANTHAPPA SANJEEVAPPA. A Basis for Developing Programs of Adult Farmer Education in India. Thesis, Ph.D., 1966, University of Minnesota, 217 pp., Library, University of Minnesota, St. Paul.

Purpose. To identify principles and objectives of operating adult farmer educational programs in midwestern community schools, to identify the underlying principles of the several educational and agricultural development programs in India since Independence, to identiy the basic and vocational educational needs of the present-day Indian farmer, to test the commonality of objectives and attitudinal levels in the midwestern states toward principles and procedures in adult farmer education, to propose an adult farmer education program through the community development work in India, and to suggest ways of implementing the proposed program in India that will apply the principles and procedures identified that will operate effectively across cultures.

Method. Data were collecced from two groups of vocational agriculture educators representing seven mid-western states. Group "S" constituted 31 supervisors and Group "T" constituted 38 teacher trainers in vocational agricultural education. An opinionnaire of 14 statements of principles and objectives of an adult farmer education program was developed and mailed to Groups S and T. The respondents were asked to indicate their reactions on the following scale: Strongly Agree SA: Agree A; Slightly Agree SLA; Slightly Disagree SLD: Disagree D; and Strongly Disagree SD.

Findings. Nine statements of principles and objectives were strongly agreed upon by both Groups "S" and "T." Out of the remaining five statements of principles and objectives, two of them were generally agreed upon by Groups "S" and "T" and three of them were generally disagreed upon by both the groups. Statistical analysis indicated that all the 14 statements of principles and objectives were relevant to established programs of adult farmer education programs in the selected midwestern states.

On the basis of these findings a program of adult farmer education through community development work was proposed and procedures to implement the same through the community development program in India were also suggested.

39. HAWKINS, DONALD M. The Effectiveness of a Herd Testing Program in Vocational Agriculture as a Means of Improving Efficiency of the Dairy Enterprise on Farms of Students. Report, M.S., 1966, University of Wisconsin, 45 pp., Library, Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Purpose. To determine the level of production in 12 herds in the Mineral Point High School area after each of three years of continuous testing and to determine the relationship between the use of certain selected improved dairy management practices and the level of production of the 12 herds.

Method. Data were obtained from the Owner-Sampler Dairy Herd Improvement Association Monthly Report sheets for the 12 different dairy herds, the herd owner, and his son. All herds tested for three years on a program supervised by the vocational agriculture instructor were used in the study. A data sheet was developed for use in an interview and observation-type situation with the herd owner and his son for gathering data regarding the degree to which the selected dairy management practices were employed by the herd owner and his son. The writer visited each of the 12 farms involved in this study a minimum of five times each year.

Findings. Fifty percent of the herds increased in production from 1963 to 1965. The average production of butterfat per cow for the 12 herds increased each year. The herd testing program has resulted in an improvement in the level of production of the herds.

There was little difference in the quality of hay and silage used by the herd owners but the protein in the concentrate mixture was not adjusted to the quality of roughage in lower producing herds to the extent that it was in the high producing herds. The low producing herds were not fed according to production to the degree that the high producing group of herds were. More cows were removed from herds because of udder problems than any other single factor. Owners of the low and middle production group of herds did not identify calves. The low producing group of herds milked an average of 20 days per year less than the high group of herds.

40. HAYES, GLENN WARREN. The Relationship of Socio-Economic Status of Pupils to Their Comprehension of Reference Materials Written at Different Levels of Readability. Thesis, Ed.D., 1966, University of Illinois, 113 pp., Library, University of Illinois, Urbana.

Purpose. To ascertain whether or not a relationship existed between the socioeconomic status of pupils and their comprehension of reference materials written at different levels of readability.

Method. Ninety-six ninth-grade pupils enrolled in vocational education in agriculture courses in 21 different high schools in Illinois comprised the sample for this study. The instructional materials used were selected from Vocational Agriculture Service Unit 1037, Caring for the Sow and Litter at Farrowing Time.

These materials were tested for reading grade level, rewritten to an easier reading level, and printed in the form of a folded booklet. A criterion test composed of 30 multiple-choice items was constructed to measure the pupils' comprehension of the material. The population was classified into socioeconomic classes and randomly placed into control and experimental groups. The pupils read either the original or the rewritten materials and responded to the criterion test. The pupils also responded to Test Six of the Iowa Test of Educational Development. The data collected were treated with analysis of variance, analysis of covariance, and Duncan's multiple range tests.

Findings. Differences in ability to understand the principles presented in the written materials were indicated between the socioeconomic groups. The mean scores of the middle working class were significantly higher than the scores of either of the other two socioeconomic classes. This difference was still present when the data were tested using an analysis of covariance with reading comprehension as the covariate. Duncan's multiple range test revealed no significant difference between the working class and the middle and upper class.

An analysis of variance indicated differences between the experimental and the control group scores on the recall portion of the criterion test. An examination of the treatment means revealed that the pupils who read the rewritten instructional material scored higher than did those pupils who read the original form of the instructional materials.

No significant differences were found between the scores of the three socioeconomic groups of pupils on the recall portion of the criterion test. When the data were tested using an analysis of covariance with reading comprehension as the covariate, the differences between treatments was not statistically significant at the .05 level.

No statistically significant differences were found between the reading comprehension scores of the socioeconomic groups reacting to the Iowa Test of Educational Development nor between the scores of the groups who read either the original or the rewritten version of the instructional material.

The total scores of pupils in each of the three socioeconomic groups on the criterion test were not significantly different from each other at the .05 level. There was no significant difference between the total scores of those pupils who read the original version or the rewritten version of the instructional materials.

There were no statistically significant differences in achievement between levels of socioeconomic groups when the scores on the application portion of the criterion test were examined with the analysis of variance technique. No differences were apparent between the two groups who received the different instructional materials. The analysis of covariance with reading comprehension scores as the covariate did not reveal any significant differences between the socioeconomic groups or between the two treatment groups.

41. HEMP, PAUL, PHIPPS, L. J., WARMBROD, J. ROBERT, EHRESMAN, NORMAN D., and MCMILLION, MARTIN. Illinois Agricultural Education Curriculum Research Project. Staff Study, 1966, University of Illinois, 58 pp., Division of Agricultural Education, University of Illinois, Urbana.

Purpose. To develop and try out innovations in agricultural education which might be useful in preparing persons for agricultural occupations other than farming.

Method. Innovations in curriculum and agricultural experience programs were tried out in four pilot high schools in Illinois. Staff members from the University of Illinois made monthly visits to each of the pilot schools and collected data on curriculum content, teaching methods, agricultural experience programs, and FFA. A case study approach was used to analyze and interpret changes in program and methodology and to judge the results of pilot procedures. Near the close of the school year students and employers were interviewed using evaluation questionnaires. Pilot schools were encouraged to select and try out practices which seemed to be appropriate for their local situation. The research staff suggested innovations to school administrators, guidance counselors, and teachers of agriculture which might be used in adjusting local programs to the new demands of the Vocational Education Act of 1963.

Findings. This study was designed to try out innovations in agricultural education in a normal school setting. The findings should not be generalized beyond the schools from which they came. Some of the findings of this study are as follows:

1. A community survey of nonfarm agriculturally-oriented businesses needs to be completed before a course involving placement-employment is started.
2. An agricultural advisory council including members from nonfarm agriculturally-oriented businesses needs to be in operation before a change in courses is initiated.
3. Placement-training programs need to stress "education-through-work experience" and not just "work experience."
4. Titles of agriculture courses often need to be changed to capture the attention to prospective pupils and the public, and to alter the production-centered image of vocational agriculture.
5. Teachers of agriculture placing pupils for training must accept responsibility for placing pupils in jobs. They cannot delegate this responsibility to the pupils.
6. Maximum as well as minimum limits on hours students spend in training stations should be established. By allowing students to work an excessive number of hours, teachers of agriculture may be accused of encouraging students to drop out of school or to slight their school work.
7. Teachers must visit training stations periodically to supervise students and to help employers conduct on-job instruction. A suggested frequency for supervisory visits is one visit per month to each training station.

8. Placement-employment programs for seniors should be terminated about a month prior to the close of the school year so neither the student nor the employer will feel an obligation to continue the relationship on a permanent basis.
9. Training program outlines which include specific activities to be accomplished on a monthly schedule are almost impossible for employers to implement.
10. The common elements of content which apply to all students enrolled in an agricultural occupations course are drastically reduced as the diversity of occupational objectives and training stations within a class is increased.

Additional findings of this study include training program outlines for six training stations and a step-by-step procedure for teachers to use in initiating placement--employment programs in vocational agriculture.

42. HILL, JACK K. A Study to Evaluate the Social and Economic Implications of Strip Mining to Harrison County. Thesis, M.S., 1965, Ohio State University, 89 pp., Library, Ohio State University, Columbus.

Purpose. To identify the effects of strip mining upon the people of Harrison County under the assumption that the effects would be similar in other counties in Ohio which were affected by strip mining and that any educational efforts made to counteract these effects would be applicable in other counties.

Method. One hundred and eighty questionnaires were sent to selected leaders in Harrison County. The questionnaire dealt with attitudes and problems of the county as these leaders viewed them. Personal interviews were made with 40 people who had sold their farms for coal. This was to determine attitudes and reasons for selling and to determine economic betterment from selling. Eighty-seven community evaluation criteria were selected and a comparison of these was made between Harrison and Carroll counties, a control community. The objective was to determine the economic and social status of Harrison County which was heavily strip mined with that of a similar county not affected by this process. Tax records were compared between Harrison and Carroll counties to determine the economic impact of strip mining to Harrison County.

Findings. Strip mining was found to have had a deleterious effect upon the economic and social growth of Harrison County. Most of the leaders of the county were aware of this and realized that for community development they must reckon with it. It was found that the landowners cannot be expected to think of the total community when offered what they consider high prices for their land. Community development has not kept pace in Harrison County in comparison with other counties in the state. Educational authorities along with county leaders must work hand in hand to develop a community development program to fit this situation.

43. HOERNER, THOMAS A. Factors Related to Employment of Iowa State University Graduates in Agricultural Education. Dissertation, Ph.D., 1965, Iowa State University of Science and Technology, 170 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the factors that influenced the employment tenure of men who qualified to teach vocational agriculture.

Method. Data were obtained from the graduates' permanent records in the office of the Registrar and from an eight-page questionnaire mailed to each graduate. The 1,022 individuals who were graduated from Iowa State University during the period January 1, 1940 to July 1, 1964 were studied.

Findings. The major findings were: (1) 89 percent of the graduates were farm reared; (2) 59.3 percent of the parents of graduates were farm owner-operators or managers; (3) 53 percent of the graduates had completed one or more semesters of vocational agriculture, whereas 33.4 percent had completed seven to eight semesters of agriculture in high school; (4) family members were responsible for influencing 44.5 percent of the graduates' attendance at college; (5) 43.3 percent of the graduates were aware of the vocational agriculture teaching profession prior to college enrollment; (6) average tenure in vocational teaching was three years for all graduates, whereas the graduates who had entered teaching directly after graduation taught an average of 5.4 years; (7) the 186 graduates (18.2 percent) who were teaching in 1964 had taught an average of 7.0 years; (8) 654 graduates (64.0 percent) had taught vocational agriculture at sometime since graduation, whereas 570 graduates (55.8 percent) had entered teaching directly after college graduation; (9) first employment areas of graduates included vocational agriculture teaching, 56 percent; veterans on-farm training program, 8.7 percent; extension service, 5.9 percent; farming, 5.5 percent; and high school teacher other than vocational agriculture, 2.6 percent; (10) mean first employment income was $4,524 for the vocational agriculture instructors, whereas the mean income for all graduates was $4,440; (11) employment areas in 1964 included vocational agriculture teaching, 18.2 percent; farming, 10.3 percent; feed and seed business, 7.2 percent; extension service, 6.8 percent; high school teacher other than vocational agriculture, 6.7 percent; and government work. 5.2 percent; (12) average income in 1963 for all graduates was $8,002, whereas vocational agriculture instructors reported a mean income of $7,000; (13) factors which had the greatest influence on the graduate's decision to enter the first employment area were felt best trained, working closely with people, freedom, and independence of the job and salary; (14) the factors having the greatest influence on the graduate's decision to enter the 1964 employment area were felt best trained, freedom and independence of the job, salary, working closely with people, opportunity for advancement, and security; and (15) the graduates who had entered vocational agriculture teaching, but left for other occupations, rated long hours and evening responsibilities, salary and advancement opportunities, community factors, interpersonal problems, and failure to adjust to the teaching assignment as having the greatest influence on their decision to leave the profession.

44. HORNER, JAMES T. An Experiment to Compare Effectiveness of Various Means of Enlisting Participation in Young Farmer-Rancher Short Courses. Staff Study, Department of Agricultural Education, 20 pp., University of Nebraska, Lincoln.

Purpose. To compare relative effectiveness, in terms of investment of time and money, of various channels of communication for enlisting participation in short courses.

Method. Fifteen experimental treatments and a control were employed in 45 randomly selected communities. Each treatment consisted of a different combination of channels of communication and was applied to one randomly selected set of three communities. Various combinations of three basic approaches or methods of contact were compared. The three involved: (1) contact by University faculty members, (2) contact by local leaders, and (3) mass media including the mails.

Findings. The total efforts greatly increased the enrollments in short courses. Although the results are insufficient for generalization, they tend toward the opposite of the original prediction which was that the percentages enrolling in short courses would be positively correlated with the degree of personal contact. Personal, face-to-face contact with prospective enrollees is far more expensive and markedly less fruitful in terms of enrollees per number of contacts. The least expensive, yet most efficient method of recruiting, seemed to be mimeographed letters to individuals judged by local agricultural educators to be promising prospects. In viewing the results of the experiment, one might conjecture that common characteristics of young adults most likely to enroll in certain educational programs could be identified and utilized. For instance, it was observed that most of those who actually enrolled in the short course came from farms and ranchers with a rather high capital outlay. Perhaps economic backing or other latent circumstances exist, and a minimum of stimulus such as a mimeographed letter or a magazine article will trigger action.

45. HOUSEHOLDER, WILLIAM ALLEN. An Evaluation of Work Experience Programs as an Element of Agricultural Education in a Panamanian School of Agriculture. Thesis, Ph.D., 1965, Michigan State University, 112 pp., Library, Michigan State University, East Lansing.

Purpose. (1) To determine the effectiveness of individual work experience programs at the National School of Agriculture, Divisa, Panama; (2) to determine some of the factors relating to the graduate's satisfaction with his work; and (3) to determine if the agricultural leaders of the country react favorably to the school.

Method. Data were collected from 121 Panamanians who graduated from the National School of Agriculture since 1960, and from 51 of their employers. Of these, 83 percent of the graduates and 71 percent of the employers responded to questionnaires. One part of the graduate questionnaire included an experience rating scale through which graduates compared new individual work experiences, those introduced into the program of instruction since 1958, with the older and more traditional agricultural field practices and academic experiences. The questionnaire also included a scale which indicated job satisfaction. The employer questionnaire included a series of agreement-disagreement statements which ascertained how employers felt about the school. Chi-square and testing the difference between means, utilizing "t," were the major statistical tests in analyzing the data.

Findings. The graduates' mean rating scores of their individual work experiences were significantly higher than mean scores for either traditional vocational or academic experiences. Graduates rated those experiences in which they participated on an individual basis consistently higher than those experiences that required group participation. Graduates were more dissatisfied with their jobs than average USA workers but less dissatisfied than workers in some other cultures including Mexico and European countries. Factors relating to job satisfaction commonly found among American workers are applicable to young Panamanians launching work careers in agriculture. Agricultural leaders of Panama emphasized the need for more skill training in agricultural production and industrialization and they believed that there should be more opportunities in adult farmer education.

46. HOYT, LINDLEY JOHN. Competencies in Livestock Marketing Needed by Farmers. Thesis, M.S., 1965, Iowa State University of Science and Technology, 120 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. (1) To determine the competencies needed by beef, sheep and swine producers to be successful in livestock marketing, (2) to determine certain characteristics of successful producers and their relationship to degree of competency needed and possessed, and (3) to determine educational needs of future replacement for beef, sheep and swine producers in the area of livestock marketing.

Method. A list of 74 competencies in livestock marketing was developed by a panel of livestock specialists and submitted in questionnaire form to a selected sample of 100 beef, 100 sheep and 100 swine producers in Iowa, all of whom were classed as outstanding producers. Responses indicating degree of competence needed and possessed were analyzed using mean scores.

Findings. For the beef producers, highest mean scores for degree of competence needed were found for the understandings of: county, state and national beef promotional organizations, consumer demands for beef, and livestock loss and factors causing such loss. Highest rated abilities were: to estimate grade and yield of cattle, and to figure returns above costs.

In the area of sheep production, highest mean scores for degree of competence needed were found for the understandings of: consumer demand for lamb; government wool support programs; livestock loss and factors affecting such loss; and for the ability to do a good job of buying lambs.

For the swine producers, highest mean scores for degree of competence needed were found for the understanding of the influence of heritability factors on market grade or dressing percentage and for the abilities to figure feed conversion of pigs above 200 pounds; evaluate methods of marketing and select the method providing the greatest return; and select the market which gives the best return.

There were at least 23 competencies necessary for success in beef marketing, 25 in sheep marketing and 19 in swine marketing. Comparisons among groups showed the following relations between total oerall scores for competence needed and possessed: (1) livestock producers with fewer years of experience had wider differences for men with more formal education, whereas beef producers had wider differences for those with less formal education; (3) increased years of vocational agriculture tended to decrease the differences; (4) men without training in livestock production in young farmer, adult evening class or veterans on-farm training had wider differences than those who had such training; (5) smaller size of livestock enterprise tended to widen the differences, except with the sheep producers where the reverse was true; and (6) producers who bred grade and combination livestock tended to have wider differences than purebred and crossbred producers.

47. JACOBS, CLINTON O. An Analysis of Activities in Farmstead Mechanization Experienced by Selected Farmers and Associated Businesses, with Implications for Vocational-Technical Education in Agriculture. Thesis, Ed.D., 1966, University of Missouri, 159 pp., Library, University of Missouri, Columbia.

Purpose. To analyze selected activities in farmstead mechanization as experienced by farmers and associated businesses and to interpret the findings for vocational-technical education in agriculture. The study also attempted to determine whether farmers, dealers, and manufactures' representatives agree in their response to selected knowledge and ability factors when evaluating their work experiences in the area of farmstead mechanization.

Method. Data were obtained by an extensive review of Kansas Farm Management Association records and by interviews with 30 selected farmers having reported functional mechanized farmsteads and with 18 dealers and 16 manufacturers' representatives closely identified with the distribution of mechanized farmstead equipment. The interview schedule consisted of a check list for recording volume of materials handled and equipment used, selected questions for obtaining opinions, and a check list of factors for evaluating 80 knowledge and ability factors in the subject-matter area of farmstead mechanization.

Findings. The selected farmers derived most of their gross income from livestock, owned more crop acres, and produced a greater number of man work days per year. No difference in means was found when farmers were compared on income from crops and supplies, and total acres owned, rented, or crop acres rented. The average materials handled were nearly 3,200 tons per year per farm.

The significant difference in mean rank by which farmers, dealers, and manufacturers' representatives evaluated various farmstead mechanization activities suggests that there may be differences in training requirements for levels of employment. Also, significant differences in mean rank of subject matter as evaluated by farmers and dealers suggests that instruction in farmstead mechanization for these groups be directed toward particular expressed needs. Employment opportunities with dealers in Kansas were limited, but there was very much optimism about future business opportunities.

48. JOHNSEN, DONALD GUY. Employment Status of Former High School Students of Vocational Agriculture in Minnesota. Coloquium Paper, M.S., 1965, University of Minnesota, 63 pp., Library, Department of Agricultural Education, University of Minnesota, St. Paul.

Purpose. To determine the occupational status of former high school graduates and dropouts who had completed one or more years of vocational agriculture in the public schools of Minnesota.

Method. A survey form developed by the Department of Agricultural Education at the University of Minnesota was distributed to all vocational agriculture departments in the state. The data sought pertained to present employment status, farming status, years of vocational agriculture completed, and years of high school completed. The data were tabulated and analyzed for 8,180 former students of vocational agriculture from 215 high schools throughout the state who had graduated or dropped out of high school during the school years 1953-54, 1956-57, 1959-60, and 1962-63.

Findings. Over 99 percent of the former students were employed. The rate of employment increased proportionately with additional number of years of vocational agriculture completed. Almost one-third of the students were engaged in farming and a little over ten percent were employed in off-farm agricultural occupations. About 14 percent were employed in occupations of a mechanical nature. Slightly over one-third of the former students in the study were employed in nonagricultural occupations. Over 55 percent of the former students in the civilian labor force were engaged in farming or employed in agriculturally related occupations. An additional 18 percent of the former students in the civilian labor force were employed in mechanical occupations related to the training they received in vocational agriculture.

49. KAEWMORACOT, SA-NGUAN. The Methods and Resources Used for Developing the Curriculum in Animal Husbandry for Vocational Agriculture in Kansas. Master's Report, 1965, Kansas State University, 67 pp., Library, Kansas State University, Manhattan.

Purposes. To determine the methods and resources used by vocational agriculture teachers in teaching animal husbandry to high school vocational agriculture students.

Method. Fourteen vocational agriculture teachers in Kansas were interviewed.

Findings. The teachers rated beef cattle, animal health, feeds and feeding, and swine production as the most important areas in animal husbandry. Vocational agriculture teachers would rather teach animal husbandry to high school students than young and adult farmer classes. The teachers devoted more time during the sophomore year to animal husbandry than any of the other years. The best aids in animal husbandry teaching included the teacher's personal farm background, university specialists, bulletins, reference books, farm magazines, movies, and commercial literature. The teachers rated lecture, field trips, and visual aids as the most useful methods in teaching animal husbandry. Work books had the least value in teaching.

50. KALATON, PRAYONK. A Study of the Responsibilities and Activities of Kansas Vocational Agriculture Teachers for the Year 1959. Master's Report, 1964, Kansas State University, 73 pp., Library, Kansas State University, Manhattan.

Purpose. To analyze selected responsibilities and activities of Kansas vocational agriculture teachers other than teaching in regular classes.

Method. The data were obtained by an analysis of the Annual Agricultural Report as kept on file by the State Board for Vocational Education. The reports studied were those submitted by 196 teachers of vocational agriculture in Kansas.

Findings. The findings indicated that for the year 1959, the average teacher of vocational agriculture in the State of Kansas (1) had 35 students in his teaching load, (2) had seven students who graduated at the end of the year, (3) had three graduates or 42.86 percent of the students who graduated placed in farming, (4) visited the homes of each student three times per year, (5) traveled 3,653 miles in supervision and community work, (6) conducted 41 class field trips for regular instructional purposes, (7) conducted three sponsored trips, (8) trained five teams of students for contests, (9) supervised the students' farming programs, (9) supervised the students' farming programs, (10) conducted one parent meeting, (11) held a parent-son banquet, (12) conducted 13 other meetings, (13) wrote 19 newspaper articles, (14) supervised the students in rendering community services to the farmers, (15) helped the students in cooperative efforts, and (16) belonged to four organizations.

51. KANTNER, EARL FRANKLIN. Adapting the FFA to a Changing Program of Vocational Agriculture. Thesis, Ph.D., 1965, The Ohio State University, Library, The Ohio State University, Columbus.

Purpose. To suggest ways of adapting the Future Farmers of America (FFA) to a changing program of vocational agriculture. The study involved the identification of new purposes of the FFA, the evaluation of selected operational guidelines, and the evaluation of national and state FFA activities.

Method. The study was nationwide in scope involving members of the United States Office of Education, head state supervisors of vocational agriculture, head teacher educators in agricultural education, executive secretaries of state FFA associations, state presidents of vocational agriculture teachers' associations, and selected secondary school administrators.

Findings. The study resulted in the development of new purposes for the FFA. These new purposes would provide for broadening the scope of the organization to include activities for all students enrolled in vocational agriculture classes. Conclusions drawn from the findings were as follows.

There should be only one youth organization for students of vocational agriculture. The scope of the FFA should be broadened by adding activities appropriate for students engaged in off-farm instruction. The FFA should remain a separate and distinct organization rather than merging it into an all-vocational club.

The scope of the organization should be broadened by changing terminology in reference to "farming" to "agriculture." The present FFA degree program should be broadened to include off-farm agricultural interests rather than establishing a separate set of degrees. Girl membership should be considered.

The name "Future Farmers of America" should not be changed at this time. A changing program, however, suggests continued study of this item.

The leadership activity public speaking should be continued at local, intermediate, state and national levels. The degree program should be continued at the local, state, and national levels as it is now administered with some consideration given to administering the second degree at the intermediate level. Proficiency awards should be retained in the FFA awards program. The Star Farmer Award should be retained at the local, state, and national levels but all other proficiency awards should be administered at the local and state levels only. The chapter activities, chapter contest, and farm safety contest should be continued at the local and state levels. Intermediate and national level offering is questionable.

The judging of general livestock and of dairy cattle should be retained in the program but continued judging of meats, poultry and eggs, and dairy products is questionable. General livestock and dairy judging should be offered at the local and state levels. Intermediate and national level offering is questionable.

The following miscellaneous activities should be offered at the local level: scholarship award, proficiency awards, parliamentary procedure, extemporaneous speaking, and agricultural engineering contest. The following eight miscellaneous activities should be given careful consideration before implementation: cooperative award, horticulture judging, agronomy judging, creed recitation, farm forum, secretary's award, treasurer's award, and reporter's award. The following five miscellaneous activities should be offered at the state level: proficiency awards, agricultural engineering contest, cooperative award, horticulture judging, and agronomy judging.

52. KNEWTSON, HAROLD DEAN. Farm Income of Young Farmers Enrolled in Farm Business Analysis. Master's Report, 1965, Kansas State University, Library, Kansas State University, Manhattan.

Purpose. To determine if the rate of change in farm income of young farmers in Kansas was accelerated during the time they received instruction in farm business analysis.

Method. A random sample technique was used to select 50 young farmers who had received instruction in farm business analysis. An attempt was made to interview each of these young farmers to determine farm income for the year 1960 through 1964. Thirty-eight young farmers were interviewed. Farm income figures for the same period from the state farm management summary were used for the farm management group. Realized net farm income for the state average group was taken from the Kansas State Board of Agriculture reports.

Findings. Net farm income was determined for each group for the years 1960 through 1964. The farm business analysis group gained an average of $693 per year before instruction was given. During the same three years the farm management group had gained at the rate of $309 per year and the state average group had gained at the rate of $722 per year. It was predicted that the farm income would continue to increase at these rates or that variation would be at constant rates for each group.

Farm income increased at a rate of $164 per year for the farm business analysis group after instruction was given. The farm management group had a reduction of $1,799 per year and the state average group had a reduction of $541 per year during the same two years.

The variances in farm income and in the rate of change were tested at the .05 level of confidence by analysis of variance and the t test. No significant difference was found between the state average group and the farm business analysis group of either the amount of change in farm income or the variance from the predicted rate of increase.

The farm management group was found to have a significantly higher farm income during the first three years when compared with either of the other groups. The variance from the predicted rate of change for the farm management group was significant when compared with the farm business analysis group and not significant when compared with the state average group.

Although some variance did occur in favor of the farm business analysis group, it was concluded that no significant differences had occurred in the rate of change of farm income after farm business analysis instruction was offered.

53. LANG, LUKE F. The Vocational Status of the Vocational Agriculture Graduates of the Marathon High School from 1952-1963. Seminar Report, 1965, University of Wisconsin, 50 pp., Agriculture and Extension Education Department, University of Wisconsin, Madison.

Purpose. To determine the present occupational status of the 1952-1963 vocational agriculture graduates of the Marathon High School.

Method. Departmental records were used to obtain the names of graduates having four years of vocational agriculture. A questionnaire was used to obtain data from the graduates.

Findings. Fifty-seven percent of the group had held two or less jobs during the period studied. Twenty-eight percent of the group were farming. An additional 24 percent were engaged in related occupations, 33 percent were in nonrelated occupations and 14 percent were in school or in military service. One person was unemployed at the time of the study. Eighty-nine percent of the group considered themselves either very satisfied or satisfied in their present occupation.

It was found in course evaluation that the highest values were placed on vocational agriculture and mathematics. Eighty percent of those farming rated vocational agriculture has having very much or much value in their work. Very few school activities other than the Wisconsin Junior Dairyman's Association and the Future Farmers of America were rated by the group as being of much value. Twenty-five percent of the group had some education beyond high school.

54. **LANGDON, CHARLES L.** A Survey of Agricultural Occupations in Michigan, Staff Study, 1965, Publication No. 550, Division of Vocational Education, Michigan Department of Education, Lansing.

Purpose. To identify present and emerging agricultural occupations, other than farming and ranching, for which vocational-technical agricultural education would be available; (2) to determine present and anticipated numbers of employees in these occupations; (3) to estimate the annual entry opportunities in these occupations; (4) to determine competencies needed for entry and satisfactory performance in these occupations; (5) to determine other characteristics of these occupations such as salary, minimum age for entry, union restrictions, labor laws, required experience, formal education; and (6) to determine continuing education needs of persons employed in these occupations.

Method. The study, sponsored by the Michigan Agricultural Conference, was directed by the Vocational Agricultural Service of the Michigan Department of Education. Survey forms were used to collect data.

Findings. The firms surveyed employed a total of 3,916 persons--31.7 percent of whom had agricultural job titles. The firms expected to employ 1,543 agricultural workers within five years, an increase of 24.5 percent. The greatest increase (57.8 percent) was expected in the agricultural service occupations. The greatest increase was expected at the "sales" level of employment with technicians and skilled workers needed in greater numbers also.

It was possible in two cases to expand the study of the number of employees needed to a state-wide basis--farm machinery sales and service and nurseries. This resulted in an indicated annual need for 292 persons for expansion and 234 persons for replacement, or a total of 526 new employees per year in Michigan in farm machinery sales and service establishment. The indicated annual need by nurserymen for new employees was 194 for expansion and 241 for replacement, or a total of 435 new persons each year.

Top salaries of professional workers, technicians, proprietors, managers, and sales people ranged from $700 to over $900 per month. The minimum age for entering the agricultural occupations studied ranged from a low of 20-21 years at the unskilled level to 25-35 years at the proprietor' and managers' level. A farm background was a requirement or preference in 63.7 percent of all job titles listed in the survey. A preponderance of respondents listed farm background as a requirement or preference for professional workers, technicians, proprietors, managers, and sales people. In no case was an urban background preferred. The study revealed the 53.1 percent of the agricultural workers could be acceptably replaced with persons with a high school diploma, 32.1 percent with post-high school education of less than baccalaureate degree, 10.3 percent with a college degree, and 4.4 percent with a master's degree.

55. LAUER, ALOIS J. Employment Opportunities and Needed Competencies in Agricultural Occupations other than Farming in Anoka County, Minnesota. Colloquium, M.S., 1965, University of Minnesota, 63 pp., Library, Institute of Agriculture, University of Minnesota, St. Paul.

Purpose. To determine the number and type of agricultural workers in off-farm agricultural businesses and to determine the requirements for advancement in useful employment in these businesses.

Method. Interviews were conducted in 252 firms within suburban Anoka County using two questionnaires. The three major problem areas associated with job titles in off-farm agricultural businesses investigated were entrance requirements, activities and duties, and agricultural competencies.

Findings. Eighty-eight firms indicated that employees needed knowledge or competencies in agriculture. Firms needing agricultural competencies were primarily service and retailing. A friend's recommendation or actually looking for a job are the most general sources of obtaining employment. More education is desirable for the better positions. High school completion is becoming more important. Farm people are desirable employees. Workers with specific abilities are needed in new job titles. Keeping records and handling money are important in business competencies. Dairy cattle, beef cattle, corn, and grasses are important competencies in animal husbandry and crop, respectively. In rating all competencies independently, customer relations ranked first; farm electricity second; salesmanship third; machinery and equipment fourth; power equipment, tractors and motors fifth; and building and construction sixth.

56. LUSTER, GEORGE LOWELL. A Teacher Evaluation of Selected Teaching Materials for Programs of Vocational Agriculture in Kentucky. Staff Study, 1965, University of Kentucky, 13 pp., Department of Agricultural Education, University of Kentucky, Lexington.

Purpose. To have teachers of agriculture in Kentucky evaluate selected teaching materials.

Method. A survey was mailed to the 265 high school teachers of agriculture. The survey contained an open-end question asking for suggestions to improve the teaching materials program. One hundred fifty-five surveys were returned. The surveys were not coded and teachers were not asked to sign them.

Findings. Nineteen of the 58 teaching units were used by more than two-thirds of the teachers. Forty-six of the units were used by more than one-third of the teachers.

The sections of units dealing with content received the highest rating. These included content or subject material, supplementary information to support content (tables, charts, and drawings), major teaching objective and minor teaching objectives, and references. The suggestions on techniques of teaching (introducing the unit, providing class instruction, and evaluating) rated lower. Teachers felt calendars and lists of improved practices, colored slides, and teaching materials newsletters were helpful and that these materials should continue to be provided.

Teachers generally had the equipment needed to use available instructional media. About half had overhead projectors and about a third had access to a copier to prepare transparencies.

57. MADDEN, ROBERT L. Opportunities and Training Needs in Non-Farm Agricultural Occupations in a South-Western Iowa School District. Thesis, M.S., 1965, South Dakota State University, 83 pp., Library, South Dakota State University, Brookings.

Purpose. To determine the approximate number of nonfarm agricultural employment opportunities which occur annually within the Hamburg (Iowa) Community School District and to determine what background characteristics and areas of technical training and basic education are required to enter these occupations.

Method. Data for this study were obtained from representatives of each nonfarm agricultural firm or agency located within the school district and by the use of interviewer marked questionnaire forms especially designed for the purpose. All nonfarm agricultural businesses employing one or more persons and located within the school district were included.

Data were compiled and analyzed according to agricultural business function categories. Employee activities and duty frequencies indexes were computed by category. Importance indexes of specific areas of technical training and basic education were similarly computed. Indexing was achieved by a frequency weighting technique.

Findings. Annual estimated nonfarm agricultural job opportunities (39 persons per year) far exceed the largest number of annual high school graduates who have received one or more years of vocational agriculture instruction. Employers rated the relative importance of specific areas of technical training and basic education as applied to employee efficiency. Care and use of tools and machinery, engine mechanics, basic agronomy, crop storage and processing, business management, and applied mathematics and chemistry were rated as important areas of knowledge and skill. Thirteen of 15 firms were willing to participate in a cooperative school-business training program of nonfarm agricultural occupations.

58. MANNEBACH, ALFRED J. Selected Characteristics of and Projections for Vocational Agriculture in Kansas Area Vocational-Technical Schools. Master's Report, 1965, Kansas State University, Library, Kansas State University, Manhattan.

Purpose. To determine selected characteristics of and projections for vocational agriculture in area schools and to compile selected basic information which could be used in formulating guidelines in the establishment and maintenance of vocational agriculture in area vocational-technical schools in Kansas.

Method. Twelve vocational agriculture departments in seven area schools were involved in the study. Data were obtained by use of an interview check list-questionnaire. Data were collected for vocational agriculture instructors or directors of area schools.

Findings. Of a total of 740 students in the area schools, 1.5 percent were high school students served on an area basis. This number was 2.3 percent of the total high school vocational agriculture enrollment in the departments served by the area school. All post-high school students enrolled in vocational agriculture in the area school were served on an area basis. Directors of area schools and vocational agriculture instructors reported that the major purposes of vocational agriculture should be preparation for an occupation, training for off-farm agricultural occupations, providing a basis for agricultural professions, and training for farming. All directors and vocational agriculture instructors stated that surveys of local, area, and state employment needs should be made to determine courses to be offered in vocational agriculture in area schools. Both directors and instructors felt that most of the post-high school students completing agricultural training in the area schools should be placed in their home and surrounding counties. Directors and vocational agriculture instructors projected that the number of agriculture instructors in the area schools would more than double in three years. They also projected that enrollment in agriculture in the area schools would increase by more than 70 percent in the next three years.

59. MATHIS, GILBERT LANDER. Managerial Perception and Success in Farming. Thesis, Ph.D., 1966, The Ohio State University, 142 pp., Library, The Ohio State University, Columbus.

Purpose. To contribute to the improvement of programs of instruction in farm management for young farmers in vocational agriculture by determining the relationship between the perception young farmers have of themselves as entrepreneurs and their success in farming. Attention was also given to identifying problem areas in farm management, determining the concepts young farmers have of management, their goal orientation and values, and evaluating young farmer instruction in farm management.

Method. Survey data were secured from 125 young farmers located in 35 Ohio counties. These young farmers represented a range of success in farming, were full-time farmers between the ages of 18 and 35, and had the managerial responsibility of the farm. Analysis of the data was made by factor analysis, analysis of variance, and multiple regression techniques.

Findings. Nine farm management problem areas or categories of managerial tasks encountered by young farmers in the sample were extracted by factor analysis from the ratings the young men gave 43 managerial tasks. Planning and organizing resources, keeping records and accounts, and the wise use of time emerged as the most frequent responses when the young farmers were asked to identify what they considered to be the most important tasks of management.

The correlation of certain personal characteristics and success factors go goal orientation and values did not always follow a positive continuum. Personal values are involved in goal formulation which cannot be reduced to dollars and cents and the goals of a farm manager are nonmonetary as well as monetary in nature. Young farmers who gave themselves high overall ratings as managers had higher farming status, more years of formal education, and higher family goal attainments than those with medium or low ratings. There was a positive correlation between most of the personal and success factors and managerial perception.

Young farmers in the sample gave the program in vocational agriculture in farm management a high overall rating. "Deciding farm enterprises" and "planning family goals" received the highest and lowest mean ratings, respectively.

Implications and recommendations for young farmer program concerned the overall design and organization of the program, teacher education, subject-matter areas and method aimed at improving the quality of instruction in farm management for young farmers.

60. MATTESON, GERALD R. Vocational Education Completed by East Central Wisconsin Graduates and Selected Employment Factors. Thesis, Ph.D., 1966, University of Wisconsin, 237 pp., Library, University of Wisconsin, Madison.

Purpose. To determine the relationship between the vocational education received by the male high school graduates and their (1) initial employment, (2) employment survival, (3) job advancement, and (4) job satisfaction.

Method. The 57 East Central Wisconsin high schools were grouped into four strata based on enrollment. A stratified random sample of ten high schools was selected. From these high schools a sample of 374 graduates was selected who met the following criteria (1) male graduates of 1960 or 1961, (2) had completed six months or less of active military service, and (3) had completed less than two years of college. Data were gathered from 310 graduates by mailed questionnaire. The Chi-square statistical technique was used to determine significant relationship between variables. The test statistic V was used to indicate the strength of relationship between the related variables.

Findings. Graduates generally obtained initial post-high school employment which was dissimilar to their fathers' even though the prestige scores of their initial employment were quite similar to their fathers'. Over one-third of the graduates' fathers were farmers. Graduates who had completed three units or less of high school vocational education less frequently had fathers who were farmers as compared to graduates who had completed four units or more. When ranking selected high school courses as to their value in the graduates' initial employment preparation, high school mathematics was rated the highest, followed by vocational agriculture, industrial arts, English and commercial courses. Over 80 percent of the graduate resided in the same community as when they attended high school.

Graduates with the most units of high school vocational education completed were less frequently unemployed. Three-fourths of the graduates, however, had not been unemployed since their high school graduation. One-fifth of the graduates were presently enrolled in a vocational education course, whereas almost one-half of the graduates aspire to enroll in a vocational education program within the next five years.

Two-fifths of the graduates presently had the same employment as they initially held after their high school graduation. Almost 75 percent of the graduates had employment dissimilar to their fathers'. Their fathers and their occupational prestige scores, however, were very similar. Graduates who had completed three units or more of high school vocational education (as compared to graduates who had completed four units or more) generally had lower occupational prestige scores and had fathers who presently held employment with lower prestige scores. Findings concerning all graduates revealed (1) three-fourths of the graduates presently and initially did not have subordinates in their employment situation, (2) the graduates most likely would have increased their salary (since their initial employment salary) from 0-39 dollars per week, and (3) they rated high school mathematics as having the most value to them in their present employment followed by industrial arts, English, vocational agriculture and commercial courses.

In general, overall job satisfaction was expressed by the graduates. The aspects of their present employment which the graduates seemed most satisfied with were the associations with their fellow workers and their boss. Graduates reported being less satisfied with the following aspects of their present employment, (1) duties and tasks which they were asked to perform, (2) job security, (3) salary, (4) promotional possibilities, and (5) training programs (in that order of decreasing satisfaction). Graduates who had completed the most units of high school vocational education tended to feel more secure in their present employment.

61. MCGUIRE, JAMES E. Teaching Basic Production Economic Principles to Secondary School Students of Vocational Agriculture: An Evaluative Case Study. Thesis, Ph.D , 1966, Purdue University, Library, Purdue University, Lafayette, Indiana.

Purpose. To develop four modules of instruction consisting of selected basic production economic principles, to try out the modules in secondary school classes of students preparing for on-farm and/or off-farm agricultural occupations, and to evaluate the content and teaching of the modules.

Method. The basic production economic principles studied were supply and demand, value theory, the law of variable proportions, and marginal analysis. Total scores and part scores from a constructed test were summarized for each module by means and standard deviations overall, by students grouped homogeneously, and students grouped by each participating school. Both teacher and student opinionnaires were used to collect data on student attitudes.

Findings. The study showed that high school students can successfully learn and apply basic production economic principles although some students enjoy the instruction and learn considerably more than others. Certain teachers appear to be much more effective at teaching economic principles.

62. MCMILLION, MARTIN B. Relationship of Socio-Economic Position to the Connotative Meaning of Certain Words Used in Vocational Agriculture. Dissertation, Ed.D , 1966, University of Illinois, 135 pp., Library, University of Illinois, Urbana.

Purpose. To determine whether or not pupils classified into three socioeconomic groups in each of the four secondary school grades placed a significantly different connotative meaning on selected words and phrases which are of importance to vocational education in agriculture, to determine whether or not the connotative meaning the agriculture teachers of these pupils placed on the words and phrases was more like that of certain classifications of pupils than other classifications of pupils, and to determine the extent to which teachers recognize any difference in connotative meaning for selected words and phrases which may exist among the various classifications of pupils.

Method. Pupils studying vocational agriculture in 21 Illinois high schools were classified into three socioeconomic groups in each of the four high school grades by use of the Sims SCI Occupational Rating Scale. A stratified random sample of 240 pupils composed of 20 pupils from each of the 12 stratifications of pupils and 21 teachers of agriculture completed a semantic differential instrument under the supervision of the researcher. Respondents indicated the connotative meaning they placed on the words and phrases by judging them against Likert-type scales consisting of a good-bad continuum, an important-unimportant continuum, and other similar continuum scales bound by adjectives which were opposite in meaning. Multivariate analysis of variance was the major statistical procedure employed in the study. The hypotheses were tested at the .05 level of significance.

Findings. The secondary school grade level of pupils studying vocational agriculture was not related to the connotative meaning placed on any of the 11 words or phrases studied. The socioeconomic level of pupils was related to the connotative meaning vocational agriculture pupils placed on the words "leadership" and "cooperation." The word "leadership" was valued more highly by the lower socioeconomic group of pupils than by the upper socioeconomic group of pupils. The word "cooperation" was valued more highly by the middle socioeconomic group of pupils than by the highest socioeconomic group of pupils.

Teachers of agriculture predicted the meaning which their pupils placed on the 11 words and phrases studied equally well for the 12 subgroups of pupils consisting of three socioeconomic levels of pupils in each of the four secondary school grades. Teachers of agriculture were more in agreement with the connotative meaning which junior and senior vocational agriculture pupils placed on the words and phrases studied than they were with the meaning freshmen and sophomore pupils placed on the same words and phrases. Teachers consistently underestimated the value which all vocational agriculture pupils as a group placed upon the words and phrases being studied.

63. MEYER, JAMES ALBERT. Opportunities for Establishment of Young Men in Farming in the Ankeny Community School District. Field Study, M.Ed., 1965, Iowa State University of Science and Technology, 59 pp., Department of Education, Iowa State University of Science and Technology, Ames.

Purpose. To determine the opportunities for establishment of young men in farming in the Ankeny Community School District which is located near Des Moines in Polk County.

Method. The operators of the 142 farms in the Ankeny District which were 20 or more acres in size were interviewed. The information obtained included the number of sons of operators, the present occupations of sons who were employed, the ages of the farm operators and their plans for retirement from farming, the life expectancy of the farm operators, the decrease that has occurred in the number of farms in the area, and the average number of farm boys that may be expected to be graduated from high school.

Findings. About 55 of the 142 operators planned to retire from farming between 1965 and 1975. According to a standard mortality table, another seven probably will die during the ten-year period. Thus, an average of 6.2 operators may be expected to leave farming each year. The 1959 U S. Census of Agriculture showed an annual decrease of 3.3 percent in the number of farms in Polk County for the period from 1954 to 1959. This would mean an estimated annual decrease of 3.8 farms in the Ankeny School District and an average annual need for replacement of farm operators of 2.4 farmers.

The findings indicated that the average number of farm boys graduating from high school each year would be about six. Therefore an opportunity may be expected for 40 percent of the sons of farmers to become farm operators. Since only 23 percent of the employed sons of farmers are now farming apparently more sons will need to be encouraged to go into farming to meet the needs of the future.

64. MITSCHELE, WALTER. Competencies in Animal Science Needed by Vocational Agriculture Instructors. Thesis, M.S., 1965, Iowa State University of Science and Technology, 100 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine competencies in animal science needed by vocational agriculture instructors, the degree of competence possessed by the instructors, and the place of acquiring these competencies.

Method. A list of competencies was developed by a panel of outstanding vocational agriculture instructors and revised by a panel of College of Agriculture specialists. The revised list was mailed in questionnaire form to 225 experienced Iowa vocational agriculture instructors. Instructors indicated the degree each of the 25 competencies were needed and possessed on a ten-point scale and whether the competence was acquired on a farm, in vocational agriculture, in college or on the job. Instructors were stratified according to teaching competency.

Findings. The ability to balance and plan rations and the principles of nutrition were evaluated as the two most needed competences. The mean needed scores ranged from 7.72 to 7.42 on a scale with a top value of nine. Rated lowest on the scale was the ability to shear sheep. In 21 of the 25 competencies listed, the instructors indicated a need for more competence than they possessed. The largest indicated need differences were for use of records in livestock selection and State Health Regulations and sanitation practices.

The instructors indicated that 15.3 percent of the competencies had been acquired on the farm, 10.3 percent in vocational agriculture, 46.1 percent in college and 28.3 percent on the job. Competencies involving understanding were more often learned in college while abilities were usually more often learned on the farm or on the job. The findings of this study indicated, that while some competencies were given much higher needed scores than others, all 25 of the animal science competencies listed were needed to some extent by vocational agriculture instructors.

65. NARANJO, GARARDO E. The Graduate Program of the Inter-American Institute of Agricultural Sciences: An Evaluation of Certain Aspects through A Follow-up of Graduates. Thesis, Ph.D., 1965, Michigan State University, 221 pp., Library, Michigan State University, East Lansing.

Purpose. To make a follow-up study of the graduates of the Tropical Center for Teaching and Research of the Inter-American Institute of Agricultural Sciences of the Organization of American States during the past 19 years, in order to measure the accomplishment of the objectives of this institution in the field of graduate training.

Method. The basic data were derived directly from interviews and questionnaire returned by 128 graduates out of a total of 157 persons who received the instrument. Appropriate tests of validity and reliability were applied to the instrument. The collected information was grouped in a total of 153 variables. In the statistical treatment of data, Chi-square was selected as the statistical tool to test the significance of collected information and the possible degree of relationship between the graduate's opinions and his department of study.

Findings. The most important finding was the high value awarded by the graduates of the Tropical Center of Graduate Teaching and Research, as a graduate educational institution serving the Latin American country members of the OAS. One hundred and twelve of the 128 respondents declared a highly favorable attitude toward the graduate school. The graduates awarded the highest value to all the educational objectives set by the graduate school and they recognized that the institute has met those objectives in an appropriate way.

The strengths which Turrialba presented as an educational institution at the graduate level were: "an ideal combination of teaching and research" endowed with "very good library facilities," "faculty with Ph.D.'s and scholarship," "very good environment, facilities, and scientific attitude to carry on research and teaching in tropical agriculture, agricultural extension, and animal husbandry." One hundred and fourteen of the 128 graduates recognized a very high level of academic competence in the faculty which forms the center. Most of the graduates following doctoral studies in American universities had received recognition for their "Magister" degree granted by the graduate school and 24 out of 28 pursuing such studies recognized that the training received at Turrialba was of great value to them in their process of doctoral education.

The graduates recommended the suitability of establishing a placement bureau for graduates. Job dissatisfaction expressed by the graduates was extremely low. Only six out of 128 respondents were dissatisfied with the specialization chosen.

The most favorite aspiration of 100 graduates was that of increasing their efficiency by way of expanding their knowledge, skills, abilities, and understandings. It was recommended that studies be made to cover more deeply certain important areas dealing with personality and effectiveness of the graduate school faculty, the academic program, the research program, and many other areas.

66. NELSON, CLIFFORD LEON. Source and Extent of Economic Commitments to Public Vocational Education in Minnesota and Their Effects on the Nature of Training Opportunities. Thesis, Ph.D., 1966, University of Minnesota, 118 pp., Library, University of Minnesota, Minneapolis.

Purpose. To examine economic commitment to public vocational education in Minnesota comprehensive high schools prior to the passage of the Morse-Perkins Act of 1963 and to examine the effects of this economic commitment in terms of program offerings and students served.

Method. All public high schools in Minnesota were surveyed for the 1963-1964 school year. Sufficient data were available from 444 school districts out of 453 to be included in the study. Data collected on the individual schools included: secondary enrollments, pupil unit enrollments, adjusted assessed valuations, total vocational enrollments, and vocational enrollment ratio (percentage of secondary students enrolled in vocational classes). In addition, enrollments in vocational agriculture, home economics, distributive education, and trade and industrial education were collected along with expense and reimbursement data for all vocational education as well as the individual vocational fields. In addition a population stratified random sample of 31 high schools was made and all seniors enrolled in vocational agriculture and distributive education were studied with respect to their academic achievement and aptitude.

Findings. Large wealth variations, in terms of adjusted assessed valuation per pupil, were found among school districts. A range from $1,868 to $22,341 was found. The data indicated a significant positive relationship between adjusted assessed valuation and vocational enrollment ratio thus indicating that wealthier districts offer relatively more vocational training opportunities.

School district wealth was independent of school size. School district size was highly significantly related, in a negative direction, to the vocational enrollment ratio indicating that smaller school districts offer relatively more vocational education opportunity. Vocational agriculture offerings had a highly significant positive relationship with the vocational enrollment ratio.

Senior students enrolled in vocational courses had uniformly lower aptitude scores in MSAT and English, when compared to all Minnesota seniors. Senior students enrolled in vocational courses achieved at close to average levels when compared to all Minnesota seniors. Student aptitude and achievement were independent of economic and enrollment variables.

The findings suggest that examination of economic and student variables might be an appropriate approach to evaluation of vocational education. Study should be given to allocation of federal funds to local school districts on equalization basis for vocational education.

67. NOOR, SHEIKH MOHAMMAD ABDUN. Perceptions of the In-Service Education Needs for Secondary Teachers in East Pakistan. Dissertation, Ph.D., 1965, Michigan State University, 151 pp., Library, Michigan State University, East Lansing

Purpose. (1) To determine a set of criteria for in-service teacher education in East Pakistan; (2) to analyze the in-service education needs for secondary teachers in East Pakistan as perceived by various administrative and educational groups; (3) to determine a set of standards for salary increases or promotion in East Pakistani schools; and (4) to determine the role played by the East Pakistan Education Extension Centre--a primary agency for in-service education of teachers.

Method. The basic data were collected through a three-month trip to East Pakistan from 333 secondary school teachers, 45 administrators and 13 consultants directly or indirectly connected with the in-service education of teachers in East Pakistan. Data were collected by three instruments and by tape-recorded, personal depth interviews.

Findings. The administrators rated their need and the need of the teachers for in-service education consistantly higher than the teachers in most of the need items The differences between the administrators and teachers on the relative "degree of need" of different items were not statistically significant in most cases. Consultants tended to have greater affinity with the administrators in their perception of those need items where differences between teachers and administrators were considered statistically significant. The teachers expressed great need in the areas of library facilities and curriculum. The administrators expressed great need in the areas of curriculum and personality as an administrator. Organized educational trips, inter-visitation of schools, workshops and faculty meetings directed to professional improvement were preferred in-service education activities. Insufficient financial grants and family responsibilities limited teacher participation in in-service education activities.

Receiving of training in teacher training college, seniority, and evidence of good teaching were the three major standards on which promotions or salary increases were reported to be decided in most East Pakistani schools.

The East Pakistan Education Extension Centre has made educational programs, and has enlarged responsibilities in spite of many obstacles stemming from ideological conflicts, organizational rivalries and competition.

The differences in thought and perception between administrators and teachers were not significant enough to cause practical problems. Both administrators and teachers in East Pakistan are satisfied with their profession. However, this satisfaction could advantageously be maximized by means of further incentives, both monetary and noneconomic.

68. OEN, URBAN THEODORE. Procedures Employed by Teachers in Conducting Off-Farm Cooperative Work Experience Programs. Thesis, M.S., 1966, The Ohio State University, 217 pp., Library, The Ohio State University, Columbus.

Purpose. To identify procedures used by teachers in conducting off-farm work experience programs and to obtain an appraisal of selected aspects of the program.

Method. The status of the off-farm programs was determined by sending questionnaires to the 70 teachers in Ohio who were identified by supervisors as conducting a program. The district vocational agriculture supervisors selected the schools for personal interview based upon the returned questionnaires. The investigator went to the different schools in Ohio and personally interviewed 13 teacher coordinators, 12 school administrators, and 24 cooperating employers using questionnaires to guide the questioning.

Findings. Approximately ten percent of the vocational agriculture departments in Ohio were conducting an off-farm cooperative work experience program. Twenty-nine percent of the students in these programs were enrolled in off-farm training. The following items were considered essential when conducting an off-farm program: good public relations; interested students; an effective and resourceful teacher; school released time for students and teachers; training outlines listing job skills to be acquired on the job; an advisory committee; separate related class; involvement of industry with the program; and sufficient instructional materials and facilities.

The number of hours that students should spend on the job per week recommended by the teachers ranged from 15 to 25 hours with an average of 18.7 hours per week. Fifty percent of the cooperating employers recommended 24 hours of work per week while 41 percent recommended 30 hours per week. All of the teachers, administrators, and cooperating employers recommended released time from school for on-the-job training, however, 62 percent of the teachers indicated that they would not place juniors for work experience during school hours.

69. OKOYE, ANAZODO ANTHONY. A Proposed Program of Agricultural Education for Nigeria. Thesis, Ph.D., 1966, Purdue University, 250 pp., Library, Purdue University, Lafayette, Indiana.

Purpose. To develop a comprehensive program of agricultural education designed to increase the level of efficiency in agricultural production, to raise the level of living of rural families, to increase the contributions of the agricultural sector to the total economy and culture of Nigeria.

Method. Data and information were secured from official documents and relevant literature. This was augmented by recent and specialized materials on agricultural education received from the Food and Agricultural Organizations of the United Nations. An intensive review of agricultural education programs in the United States was made with particular focus on the philosophy, practices, and procedures which might be adaptable to the Nigerian siaution. A comparative study of agricultural education in eight countries besides the USA was also undertaken to search for some general principles which might be applicable to the problems of Nigeria. Further data were secured by interview. Formulated principles and objectives based on this critical review were submitted to a body of experts for criticisms as a means of verification.

Findings. Agricultural education has not been given an appropriate place in the Nigeria school curriculum. Because agricultural development is a critical issue, the mass population must be taught the need for agricultural education designed to promote the welfare, economic, and social progress of the entire nation.

The development of teacher training in vocational agriculture for both primary and secondary schools should be the responsibility of the four universities in coordination with the four schools of agriculture in Nigeria. Teacher-education programs should give adequate consideration to teaching people in the villages and other rural areas. Guidance and counseling should be provided for prospective students in programs of teacher education. Teacher education is the critical factor in having successful programs of agricultural education. Teachers should be trained in programming and curriculum development. A strong, systematic, aggressive and dynamic recruiting program of young-able Nigerians to the teaching profession is imperative.

The curriculum at all levels of education must express the real life of the community and emphasize the value and dignity of agriculture. The curriculum in vocational agriculture should be challenging to the abilities of all students. Lessons in agriculture should be given to full-time pupils in both primary and secondary schools who expect to become farmers of Nigeria.

Supervised agricultural experience programs should be conducted at the homes of pupil as part of their vocational agriculture training such that the classroom instruction is integrated with the farming operations performed by the pupil. The establishment of Future Farmers of Nigeria Organizations for high school pupils enrolled in vocational agriculture should be initiated.

The federal government should enact an "Act for Vocational Education." To provide quality education and administer appropriate patterns of educational experiences, coordination, cooperation, and good communication media must exist among education departments and public schools. A ministry of agriculture should be established in the Federal Government Cabinet. This Ministry is to be charged with the whole of administration, problems of education, research in agriculture, extension, veterinary science, and home economics.

70. OLSON, FRANCIS MILO. A Study to Determine the Need for Employment of a Full-Time Adult Farm Instructor in the Reedsburg School District. Report, M.S. 1966, University of Wisconsin, 58 pp., Library, Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Purpose. To answer the question--should the Reedsburg School District employ a full-time adult farmer instructor?

Method. Questionnaires were prepared and distributed to a varied grouping of farmers in the district. Personal interviews were conducted with vocational agriculture instructors and Cooperative Extension Service personnel. In the questionnaire farmers checked their rating of the importance of approved practices and later they checked their usage of these practices. Participants in the survey gave their opinions on the type of educational activities they preferred.

Findings. Eighty-three percent of the younger farmers wanted an adult education program. Fifty-two percent of the farmers farming 20 years or more felt that the program would benefit them. Thirty-six percent of the farmers farming over 20 years said it would not benefit them.

A group of 20 approved practices was submitted to each farmer twice. On the first response they indicated the importance of the practice to themselves. On the second response they indicated their adoption of this practice. Analysis of the results indicated certain inconsistencies. Forty-six percent of the farmers stated fertilizing pastures was important in their farming program, however, 35 percent stated that they did this practice. Seventy-six percent of the farmers indicated keeping records was of high importance, 53 percent stated they did this practice.

Seventy percent of the farmers indicated they wanted night classes and 65 percent stated they wanted individual instruction on the farm. The farmers indicated interest in the following enterprise areas: dairy, crops, mechanics, pastures, swine, beef, forestry, poultry, and sheep. Fifty-eight percent stated they would participate in the program, three percent said they would not, and 39 percent qualified their answers.

71. PARSONS, WARREN. An Analysis of Training Needs and Employment Characteristics of the Greenhouse Grower in Three Metropolitan Areas. Thesis, Ed.D., 1966, Michigan State University, 113 pp., Michigan State University, East Lansing,

Purpose. To determine the nature of the training desired for the commercial greenhouse grower in terms of the relative importance of the species of ornamental flowering plants produced and of the degree of attainment of competencies needed and to secure employment information relating to greenhouse workers that could be of value in guidance and training such workers.

Method. A personal interview form was developed after reviewing occupational literature and interviewing managers of greenhouses and specialists from the floriculture department of Michigan State University. An interview was conducted with each of the managers of 58 greenhouses which covered one acre or more in the Chicago, Cleveland, and Detroit areas. The data were analyzed by tabulating (1) species of flowering plants grown in pots, as cut flowers, and in flats; (2) training of the greenhouse grower desired by managers; and (3) employment information supplied.

Findings. Under the basic areas of plant knowledge the categories of plant parts, growth processes, and plant names were considered essential by two-thirds of the managers. The second area of training, entitled competencies, included operational abilities such as greenhouse skills needed by the greenhouse grower to perform the operations involved in his job. Fifty-four percent of the greenhouse managers indicated that the following competencies listed in order of importance, were essential for the greenhouse grower to posses: (1) watering, (2) controlling pests, (3) fertilizing, (4) mixing soils, (5) potting, (6) transplanting, (7) handling chemicals, (8) clearning, (9) propagating, (10) sterilizing soil, (11) identifying growth containers, (12) applying growth substances, (13) operating boiler, (14) operating equipment, and (15) testing soil.

Three fourths of the greenhouse managers reported that the following areas of training under crop understanding, listed in order of importance, were essential:

(1) temperature, (2) water requirements, (3) pinching, (4) disbudding, (5) cutting, (6) special cultural practices, (7) humidity, (8) life cycle of plant, (9) grading and packaging, and (10) photo period. Under the greenhouse management category of training 64 percent of the managers indicated thatknowledge of labor, analysis of production, and greenhouse layout were essential for the greenhouse grower to understand. Twenty-seven percent of the greenhouse managers stated that understanding insurance, managing money, buying, selling, and marketing were essential for the greenhouse grower while 41 percent of the managers said that such training was useful. Of the mechanical activities that growers perform, 23 percent of the managers said that skill in welding, wiring, constructing, woodworking, and plumbing were essential while 45 percent of the managers indicated that these were useful.

The occupation in commercial greenhouses reported to offer the greatest number of opporunities for entry was the grower helper and the occupation which was reported to offer the greatest opportunity for advancement from this occupation was the grower. The findings of this study lend support to the recommendation that employment information and training be provided for the prospective greenhouse growers by: (1) educators and employers cooperating to provide adequate training programs and placement of employees, (2) including the categories of training desired by managers in a course of study, (3) providing up-to-date employment information for prospective employees through guidance personnel, and (4) using follow-up studies to determine how improvements may be made.

72. PERSONS, EDGAR A. Farm and Home Business Record Analysis by the Use of Automatic Data Processing Equipment. Thesis, M.A., 1965, University of Minnesota, 120 pp., Agricultural Education Department, University of Minnesota, St. Paul.

Purpose. To develop a system of summarizing farm and home business records kept in the Minnesota Farm Account Book by the use of high speed electronic equipment. The primary objectives were to speed the summary process, improve the retrievability of record data, and expand the usefulness of the farm record summary as a teaching tool in the adult farm management program.

Method. A four-page data collection instrument was devised which allowed for recording of all data for the proposed record summary. The data sheets were designed to permit data to be recorded in the same order and in the same basic units as reported in the account book and two supplementary forms used in closing the yearly account. A computer program was developed for each of the 16 tables of the analysis. Programs were developed to provide summary tables for each individual farm as well as tables of averages for groups of farms which exhibited high, low, or average earnings or efficiencies. A sample of ten farm records was drawn from the files of each of five area record analysis centers. Data were summarized electronically to provide the same type of record summary data previously prepared by the area analysis centers by manual calculation. Electronic summaries were compared to those obtained by manual methods to test the accuracy of the programming.

Findings. Electronic summary of farm records can be done effectively, economically, and with great dispatch by the proper use of high speed electronic equipment. The use of such equipment not only can easily duplicate the results obtained by manual computation, but opens new possibilities of obtaining useful information through the use of special record sorts. Refinements in the processes of computing record average and indices make the resulting summaries of greater value as teaching tools for adult farm management programs.

73. PERSONS, EDGAR. The Farmer and His Educational Investment: What Are the Relationships of this Investment to Farm Success? Thesis, Ph.D., 1966, University of Minnesota, 154 pp., Library, University of Minnesota, Minneapolis.

Purpose. To determine the relationship of selected economic, educational and biographical variables to farm success and to examine in detail the relationship of the educational investment component to farm success.

Method. The sample consisted of 528 farmers who had been formerly enrolled in institutional on-farm training following World War II. Data on the beginning farming status of each subject were collected from their training records. The current status of each veteran was obtained by questionnaire and interview. Sixteen variables were chosen to represent the educational, biographical, and economic status of the beginning farmer. The dependent variables were gross income, net income, and average yearly gain in net worth. Gross and net income were taken from income tax records for the fiscal year 1963. Multiple regression analyses were used to assess the significance of the independent variables to the equations for prediction of the criterion measures. The educational component was further examined with an analysis of multiple covariance technique.

Findings. About 25 percent of the variation in gross income can be predicted. The variables age at beginning of training, beginning tenure status, total beginning capital, Mechanical Aptitude Test score, and number of adult classes attended were most significant. Net income could not be effectively predicted with the variables selected.

About 20 percent of the variations in gain in net worth was attributed to variation in age at beginning of training, total beginning capital, size of business in tillable acres, and adult classes attended.

In the separate covariance study of the educational component the years of school completed was significant when the criterion of success was gain in net worth. This significance suggests a substitution relationship between the educational component and economic investment. Adult classes attended was significantly related to both gross income and gain in net worth indicating the importance of the availability of adult education to farm success.

74. PETERSON, ROLAND L. Indications of Agricultural Knowledge and Skills Needed by Workers in Two Metropolitan Nebraska Counties. Thesis, M.S., 1966, University of Nebraska, 72 pp., Library, University of Nebraska, Lincoln.

Purpose. To identify occupations in which workers need agricultural knowledge and skills and to compare workers needing agricultural knowledges and skills with workers who do not need agricultural knowledges and skills on the basis of a selected list of areas in which knowledges and/or skills are needed to perform the job and on the basis of activities and duties of the job.

Method. The study was designed as a status survey of the need for agricultural knowledge and skills by a sample of workers in the two metropolitan Nebraska counties: Lancaster, which includes Lincoln, and Douglas which includes Omaha. County tax lists were used as the source of names. The metropolitan sample consisted of 45 unemployed and retired taxpayers and 499 employed taxpayers or 544 subjects between the ages of 21 and 69. A 100 percent response was obtained. The data collection instrument was prepared and the data were collected by the combination of a mail survey and personal interviews. Of the total sample, 56.25 percent responded by mail and 43.75 percent were interviewed.

Findings. Of the 499 metropolitan workers, three percent were farmers. Four hundred and forty-two were males. Fifty-four, or 12.2 percent of the employed male metropolitan workers were identified as "associated agricultural workers" in that they were associated without respect to degree of depth with the agricultural industry. These persons engaged in occupations of processing and distribution of agricultural products or providing services to agriculture or agricultural workers. They checked an average of 22.1 percent of the 24 agricultural items on the instrument. They checked 31.8 percent of the business items, 13.8 percent of the home economics items, 27.9 percent of the marketing and merchandising items, 15.1 percent of the office procedure and practice items. 41.2 percent of the supervision items, 19.0 percent of the trade and industry items and 10.3 percent of the miscellaneous items. Workers classified as "associated agricultural workers" checked a higher proportion of activities such as working with personnel outside the firm and business problems than did other workers. Twenty-five percent or more of the 54 "associated agricultural workers" checked nine of the 24 agricultural items such as feeds, animal diseases, turf management and farm machinery; ten of 14 business items; four of 12 trade and industry items; three of 19 home economics items; seven of 12 marketing and merchandising items; all of the supervision items; and six of 15 miscellaneous items.

Eighty-eight, or 20 percent, of the male metropolitan workers were identified as persons not employed in agricultural industries, but who expressed the need for one or more of the agricultural knowledge and skill items. These workers checked an average of 10.8 percent of the 24 agricultural items. Checks by the 443 male workers indicating use or need for knowledge and skill varied from less than one percent on some items to more than 40 percent on others. The areas of business merchandising and marketing, supervision and personnel were checked more frequently than any other category.

The following ten activity items were checked most frequently by all the workers: decision making, meeting nonfarm people, keeping records and accounts, operating tools, equipment and business machines, training others, appraising the work of others, supervising, service, handling employees and consultation. The study depicts areas of knowledge and skills needed by workers rather than the degree of knowledge and skill required.

75. POWELL, THOMAS R. Factors Related to Employment Opportunities in Retail Fertilizer Distribution in Iowa. Thesis, M.S., 1965, Iowa State University, 86 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To determine the opportunities for employment in retail fertilizer distribution in Iowa by job categories and by economic areas of the state and to determine the experience and education of managers of firms which retail fertilizers.

Method. Questionnaires were mailed to 339 firms which were retailing fertilizer in 25 counties in Iowa. The counties were selected from each of the six economic areas in the state by a random sampling procedure. Usable forms were returned from 309 firms. Information secured included the number and ages of full-time employees by job categories for the years 1959 and 1964 and also the number who probably would be employed in 1968.

Findings. Only 25.8 percent of the firms handled fertilizer alone. The remainder handled grain and/or feed in addition to fertilizer. It was estimated that in Iowa, firms retailing fertilizer had employed 6,137 full-time male employees in 1959 and 7,286 such persons in 1964.

From anticipated needs of respondents, it was estimated that firms retailing fertilizer in Iowa will have 9,632 full-time male employees in 1968, or 32.4 percent more than in 1964. When allowance was made for retirement and employee turnover, it was estimated that there would be job opportunities for 3,939 new full-time employees from 1964 to 1968. The anticipated need included 654 fertilizer salesmen, 562 service men, 328 clerical workers, 261 feed salesmen, 229 assistant managers, 177 heads of fertilizer departments, 157 feed mill men, 151 heads of feed departments, 115 managers, 105 elevator men, and 905 unspecified employees.

The route to managership tended to pass through the job categories of service men or clerical employee moving to a sales position or to head of the fertilizer or feed department and then to the position of assistant manager or manager. Thirty percent of the managers had some college training and they averaged only two jobs before becoming managers compared to three jobs for those with 12 years of schooling.

It was concluded that the present and future expanded programs in high school vocational agriculture may serve to prepare persons for the 2,090 openings anticipated from 1964 to 1968 in-service, clerical, and unspecified job categories. Post-high school technical training courses may be used to update present employees and to prepare new employees for the 1,505 anticipated new positions as salesmen and department managers. College training may prepare persons for the need which is anticipated for 344 managers and assistant managers during the period from 1964 yo 1968.

76. QUAM, FRANKLIN DELANO. A Study of Establishment in Farming in the Ellendale Area. Thesis, M.A., 1965, University of Minnesota, 48 pp., Library, University of Minnesota, St. Paul.

Purpose. To determine the steps in becoming established in farming by young men in the Ellendale School District, Minnesota.

Method. Two techniques were used to collect information. A questionnaire survey was used to obtain information from farmers and 42 beginning farmers were interviewed personally. One hundred seventy-four survey forms were returned through the mail or collected by a high school graduate from 320 farmers within the community. The 42 beginning farmers were interviewed with an arranged school or home conference.

Findings. Farm opportunities do exist at about nine per year in the Ellendale Public School District. Vocational agriculture graduates fill an average of four out of the nine annual transfers in the district. The young man of the district works as a farm laborer for varied lengths of time between high school graduation and his start in farming. The young men have graduated from high school but have received very little education beyond it. Family help played an important role for the beginning farmers in locating the farm opportunity. Local banks and the young man's relatives were prominent sources of beginning credit. The livestock share lease, father-son partnerships, and contract for feed arrangements had a significant role in transfers of beginning farmers. Part-time farming has its place as a preliminary step to full-time farming. The majority of beginning farmers increased their net worth over $1,200 annually. Buying used machinery was preferred by beginning farmers over buying new machines or by either hiring, borrowing, exchanging or renting.

77. RANNELLS, ROBERT T. The Current Status and Direction of Graduate Programs in Agricultural Education. Colloquium Paper, M.A., 1966, University of Minnesota, 99 pp., Library, Department of Agricultural Education, University of Minnesota, St. Paul.

Purpose. To determine requirements for Master's degrees in agricultural education and to suggest some changes in the Master's degree program at the University of Minnesota.

Method. Everything from admission requirements to graduation requirements for Master's degree programs were examined at 15 midwestern and eastern universities. Questionnaires were sent to chairmen of departments of agricultural education. The University of Minnesota was compared to the responding universities and suggested changes in existing agricultural education programs were made.

Findings. There appeared to be a need for the University of Minnesota to develop courses in the area of international agricultural education and off-farm agricultural occupatinns. Consideration for course additions should be given to areas of principles of and administration of vocational and technical education and curriculum of vocational and technical education. A course in statistical methods should be required for all Master's degree candidates.

78. RICHTER, ALEXANDER R. A Study of Youth in Part- and Full-time Farming in Five Wisconsin Counties. Thesis, M.S., University of Wisconsin, 74 pp., 1964 Library, University of Wisconsin, Madison.

Purpose. To assess the differences and similarities found between youth engaged in part- or full-time farming and their perception of the largest problem of becoming established in farming.

Method. The group studied consisted of the 1957 male freshmen in the following five counties: Adams, Iowa, Manitowoc, Polk, and Price. Data from 100 respondents were studied. Data used in this study were gathered from a series of three questionnaires which had been administered between December 1957 and August 1963. Descriptive techniques, such as percentages and arithmetic means, were primarily relied upon to analyze the data. Chi-square was figured on several relationships to determine significance.

Findings. The results of the 1963 part-time farmers reveal 71 percent of the youth in Manitowoc County were part-time farmers wheras 29 percent were full time. In Iowa County the trend was different with approximately a two to one ratio which favors full-time farming. There were no differences evidenced by the father's farming status and the youth who were engaged in part or full-time farming. Over three-fourths of the farming youth's fathers owned their own farms. The father's classification in farming did not appear to be a factor in selecting part- or full-time farming as an occupation by the youth.

Although the data were not statistically significant, one-half of the total respondents had decided to farm as ninth graders while slightly more than one-third were undecided about their occupational plans when in the ninth grade. Eleven percent of part-time farming youth who stated they definitely would not farm as ninth graders are now engaged in farming, while nine of the full-time farming youth had responded negatively to farming as an occupation as ninth graders. Fifty-percent of the total respondents have goals of becoming an owner-operator. A little over six percent planned to continue in their present farming status and 12 percent plan to leave farming when the opportunity presents itself.

The parents were the most influential source of influence within the family while one out of four reported no one in the family as being influential in the occupational decision-making process. Over two-thirds of the total respondents felt that no one within the various organizations was influential in the occupational decision-making process. The youth felt that they had made their own decisions. Seven out of ten of the part- and full-time farming youth indicated the largest single problem to be of a financial nature. Twenty-seven percent indicated general economic conditions to be the largest single problem of becoming established in farming.

A difference between the part- and full-time farming youth and their goals in farming was evidenced. Forty percent of the part-time farming youth were undecided and 23 percent of the full-time farming youth responded that they were undecided in their goals toward farming.

The part-time farming youth participated more than full-time farming youth in vocational trade or armed forces schools since high school. The degree of participation was found significant at the .05 level of significance.

The full-time farming youth had a higher rate of participation in young and adult farmer classes since high school than did part-time farming youth. This finding was significant at the .01 level.

A higher percentage of the youth now engaged in full-time farming had graduated from high school than did youth who were now farming part time.

79. **RIDENOUR, HARLAN EUGENE.** Guidelines for Organizing and Operating a State Vocational Agriculture Curriculum Materials Service. Thesis, Ph.D., 1965, The Ohio State University, 198 pp., Library, The Ohio State University, Columbus.

Purpose. To develop guidelines for the organization and operation of a statewide vocational agriculture curriculum materials service.

Method. Data concerning the emphasis placed upon curriculum materials work and the kinds of services performed in assisting teachers of vocational agriculture were obtained. Questionnaires dealing with policies and practices of organization and administration were sent to she state directors of vocational education, state supervisors of vocational agriculture, and curriculum materials specialists in each of the states. A review of literature and research dealing with recommendations for curriculum materials work, theories of learning, theories of communication, theories of diffusion, and administrative patterns was conducted.

Findings. Forty-one states provided curriculum materials services in some form for teachers. Fifteen states had a formally organized service with a staff member in charge. One-third of the states reported some degree of cooperation among the vocational services in curriculum materials work. None reported a unified curriculum materials organization for all services. Ninety-six persons devoted from five to 100 percent of their time to curriculum materials work. This was the equivalent of 26.8 full-time workers. Seven states had full-time curriculum materials personnel. Few subject-matter specialists were involved. In the development of materials most dependence was placed on the printed word in the form of teachers guides with little attention given to other audio-visual media.

The study resulted in the development of a theory and a set of guidelines for the organization and operation of a state vocational agriculture curriculum materials service.

80. **RISLEY, ROBERT J.** Understanding by Rock County Farmers of Their Relationshipwith Local Agrindustry. Seminar Report, 1965, University of Wisconsin, Agricultural and Extension Education Department, University of Wisconsin, Madison.

Purpose. To determine how the farmers of Rock County viewed the off-farm segment of agribusiness in the county and if they recognized or understood the relationship of their farming operation in the local agribusiness setting.

Method. The sample for this study was randomly selected from the list of farmers in the County Agriculture Stabilization Conservation Service Office. A mailed questionnaire was used to obtain data. The farmers were asked to indicate their information sources, knowledge of local agrindustry, income, farm size and other economically-related facts.

Findings. One-third of the respondents were part-time farmers. Part-time farmers were slightly better educated and averaged slightly younger than full-time farmers. Full-time farmers farmed a larger number of acres and earned a larger gross farm income than did the part-time farmers; 45 percent having incomes over $12,500 and 50 percent being on farms of 150 acres or larger.

More part-time farmers than full-time farmers could see the relationship of the farm with agrindustry. Both groups of respondents went to educational sources for information on pressing farm problems approximately twice as often as they had gone to the economic information sources.

81. RODGERS, NORMAN GLENN. A Study of the Role of Vocational Agriculture Teachers as Perceived by Their Wives. Thesis, M.S., 1965, Ohio State University, 48 pp., Library, Ohio State University, Columbus.

Purpose. To determine the role of vocational agriculture teachers in Ohio as perceived by their wives, to identify the role of vocational agriculture teachers' wives in local programs, to determine the wives' opinions regarding positive and negative aspects of the occupation, and to obtain suggestions from the wives regarding the improvement of the occupation.

Method. Data were secured by means of a questionnaire from 142 of the teachers' wives in Ohio. Responses were grouped according to length of marriage and employment status of wives.

Findings. The average Ohio vocational agriculture teacher's wife has been married nine years, has two or three children and has completed 14 years of formal education. Her husband has completed an average of nine years of teaching. Thirty-nine percent live on farms and 37 percent in small towns. The wives rated as most important for success of their husbands "the attitude of the teacher The wives were sympathetic toward their husbands' problems and encouraged them to take advanced training. They were seldom engaged in supervision of their husband's classes or in transporting students to or from field trips. Those who had the fewest children were most actively involved in local programs.

The negative aspects of the programs identified by the wives evolved from the amount of time required in the occupation. Pleasant working conditions and associations with students were considered the most positive features. Wives married for nine years or less and unemployed identified the most negative aspects Most wives indicated that the future of their husbands as teachers in Ohio would be rewarding, interesting, and challenging. Many indicated that the wife and family should adjust to the husbands' responsibilities while others felt that the occupation should be improved by reducing the work load.

82. RUTH, WILLIAM EDWARD. A Study of Some Influences Affecting Teachers of Vocational Agriculture to Leave the Profession. Thesis, M.A., 1965, The Ohio State University, 159 pp., Library, The Ohio State University, Columbus.

Purpose. To determine the effect of home and family conditions upon the vocational tenure of the graduates, to determine the effect of pre-college training upon the vocational tenure of the graduates, to determine the relative teaching competence of graduates, and to determine the attitudes of graduates toward some aspects of vocational agriculture and other influences affecting their tenure in teaching.

Method. Data were secured by the use of a questionnaire, rating scale, and student records. The study pertains to those individuals who majored in agricultural education and graduated from the Ohio State University during the period 1949 to 1958. The study included 219 students who were former teachers of vocational agriculture and who had graduated during the above designated period.

Findings. It appears that family background did not have much, if any, effect on teaching tenure by former teachers. Farm and/or FFA experience or lack of farm and/or FFA experience had no effect on teacher tenure. College cumulative point-hour average did not indicate teaching competency. Teachers with high or those with low point-hour averages in courses in agricultural education tend to leave the teaching profession.

Teachers disliked their profession because of working hours demanded, lack of time for family life, and lack of opportunity for advancement. Teachers have opportunities for employment in other positions since preparation for teaching is also good preparation for many other kinds of work. Higher salaries and salary ceilings influenced teacher's decisions to leave the profession. Teachers who left are satisfied in their new work.

83. SCHEID, DANIEL W. The Occupational Trends of Graduates and Dropouts of Fort Atkinson High School Vocational Agriculture Department. Seminar Report, 1965, University of Wisconsin, 94 pp., Department of Agricultural and Extension Education, University of Wisconsin, Madison.

Purpose. To determine whether or not Fort Atkinson High School had adequately prepared its vocational agriculture graduates of the period 1950 to 1964 for jobs in farming and other agricultural occupations. A second purpose was to compare vocational agriculture students who dropped out of high school in the same period with those who graduated as to occupational placement as well as to identify the factors that caused them to drop out of school.

Method. A list of graduates and dropouts who completed one or more years of vocational agriculture was compiled from the high school records. The study was based on questionnaires returned within a seven-week period. The method used brought a 96 percent return of questionnaires from the graduates and nearly 90 percent from the dropouts.

Findings. No relationship was shown between the student's occupational choice when leaving high school as compared to his occupation at the time of the questionnaire. Over 56 percent of the high school graduates and 34 percent of the dropouts had entered an agricultural occupation. Thirty-three percent of the graduates and 26 percent of the dropouts were farm operators. Unemployment was not a problem with either group although the dropouts changed jobs more frequently and many were undecided about their occupation ten years from now.

Three out of four graduate and dropout respondents rated mathematics as the subject which helped the most in their present occupations. Vocational agriculture ranked second; industrial arts ranked third. Twenty-five percent of the graduates and 43 percent of the dropouts indicated they had not received any education since leaving school.

Help needed at home and disciplinary causes were the most numerous reasons dropouts gave for leaving school. The average I.Q. score of the graduate group was 9.65 points above the dropout group. No evidence was shown that either agricultural or occupations not related to agriculture received a disproportionate number of either high or low I.Q. students. Over 87 percent of the dropouts still reside in the area where they attended high school as compared to a little over 60 percent of the graduates.

84. SCHMIDT, CHARLES LEROY. An Examination of the Relationship that Exists Between the Number of Farm Visits Made per Boy by the Vocational Agriculture Instructor and the Labor Income from the Student's Supervised Farming Program. Colloquium Paper, M.A., 1965, University of Minnesota, 53 pp., Library, Department of Agricultural Education, University of Minnesota, St. Paul.

Purpose. To determine the relationship that exists between the number of farm visits per student and the labor income from his supervised farming program and to determine the value of increased numbers of farm visits to the success of the farming programs in terms of labor income.

Method. Two hundred and fifty vocational agriculture departments in Iowa during the years 1962, 1963, and 1964 were included in the study. Information for the study was taken from two report forms in the files of the Office of Vocational Agriculture Education of the State Department of Public Instruction at Des Moines, Iowa. Data collected included the number of boys completing supervised farming programs, the number of visits made to the high school students and the average labor income per department.

Findings. In the 250 departments studied, labor income per student increased with the increased number of farm visits per student. The correlation coefficient for the relationship was a positive .222. The chi-square treatment of the data showed that less than 21 percent of the time results of the relationship would be due to chance and that the size of the vocational agriculture department and the number of farm visits had a high degree of relationship with labor income from the farming program.

The data showed that as department size increased labor income per student very slightly increased and farm visits decreased. Departments with the highest labor incomes had the most farm visits per student and the lowest labor income groups had the least farm visits. The top one-fifth of departments based on farm visits had over 1.5 times the labor income of the lower one-fifth of departments based on farm visits.

85. SEVERANCE, HAROLD G. A Study of the Occupations of Graduates in Agricultural Education Who Did Not Teach Vocational Agriculture. Master's Report, 1966, Kansas State University, Library, Kansas State University, Manhattan.

Purpose. To summarize and tabulate the occupational status of Kansas State University agricultural education graduates for the years 1955-1963 who elected not to teach vocational agriculture.

Method. One hundred and nine graduates who had not taught vocational agriculture were surveyed. Usable responses were received from 67 of the graduates.

Findings. Forty-two percent of the respondents were residents of Kansas at the time the study was made. Other respondents were residing in 20 different states.

Some 35 percent of the respondents indicated that their high school agriculture instructors had influenced them to pursue the agricultural education curriculum. Forty percent of the respondents reported that their decision to study agricultural education had been made while in college.

Responses indicated that 62 different occupations had been pursued by the graduates during the period 1955 through 1963. At the time of the study, the respondents were engaged in 35 different occupations. During the years investigated, beginning vocational agriculture teachers in Kansas received a mean salary of $4,754. Returned questionnaires revealed a mean beginning salary for the graduates who did not teach of $4,311. At the time of the study the mean salary for the graduates who did not teach was $8,837. Graduates during the same period of years who were teaching at the time of the study had a mean salary of $6,357. Eighty-six percent of the respondents indicated that they were highly satisfied or reasonably well satisfied with their present salary.

Highly satisfied or reasonably well satisfied with their present occupation was the attitude of 97 percent of the respondents. Two-thirds of the respondents indicated they were highly or reasonably well satisfied that the agricultural education curriculum provided helpful instruction toward their present occupation.

Twenty-seven percent of the respondents indicated low salary as the reason they did not teach vocational agriculture. The other 73 percent of the respondents listed 16 other reasons for not teaching agriculture. Twenty-five percent of the respondents listed lack of advancement possibilities as a reason why they did not teach vocational agriculture.

86. SINHA, HARI SHANKER PRASAD. The Development of Agricultural Education in India. Dissertation, Ph.D., 1965, University of Missouri, 340 pp., Library, University of Missouri, Columbia.

Purpose. To trace the origin and development of agricultural education in India with major emphasis on new degree programs.

Method. Data were obtained from (1) a comprehensive survey of annual government year books, five-year plans, United Nations reports, and periodicals, (2) Indian government reports on the progress of education since 1886 and the progress of agriculture since 1905, (3) curricula of institutions in different states of India.

Findings. India is predominately rural with 70 percent of the population depending on agricultural occupations. More than 76 percent are illiterate. Tradition, the barrier to change, makes for inefficient agricultural practices and low productivity. The country has been plagued for generations by famines. The Department of Agriculture was established in 1871 on the recommendation of Famine Commissions.

Agricultural education is organized at three levels: primary, middle, and high school. In the rural primary schools scientific agriculture has not been taught as such. Nature study and school gardening were introduced as innovations. But these were discredited on the ground that they failed to provide government jobs. Basic education was initiated in 1937 by Mahatma Gandhi, who emphasized the principle of learning by craft. After independence, basic education became the foundation stone of education.

Two different types of middle agricultural schools have evolved--vocational and rural-bias schools. The vocational program included training in agriculture. It was expensive and did not provide a prospect for government jobs or make it possible for students who wished to continue their education in higher institutions. The aim of the bias school was to give a vocational bias toward agriculture and to improve the status of farmers. Currently the middle schools are being converted into basic schools.

Before independence, teaching of agriculture in high schools was optional and the offerings proved quite theoretical. The Secondary Education Commission of 1952 recommended diversified courses for high schools which led to the establishment of multi-purpose schools in 1955.

Teaching by extension has made use of visual demonstration procedures and the offering of practical short courses. Illiteracy still prevailed when India became independent in 1947 and the average cultivator still had not accepted improved practices of farming. Community development emerged thereafter with the idea of helping the people to help themselves. In 1960 an Intensive Agricultural District Program was launched by the Department of Agriculture to meet recurrent food crises.

87. STOTESBERY, MARVIN BOYDE. The Instructional Areas in a Program of Education for Young Farmers in the Faribault Area. Thesis, M.A., 1965, University of Minnesota, 85 pp., Library, University of Minnesota, St. Paul.

Purpose. To identify the content of an educational program for young farmers in the Faribault area based on the needs as expressed by farmers in this area and to provide a means to determine the farming opportunities in the Faribault area for behinning farmers.

Method. A questionnaire was sent to 255 farmers in the immediate Faribault area. One hundred and thirty-six questionnaires were returned. The respondents were divided into categories based upon their years of education, agricultural training, and age.

Findings. The average age of all respondents was 41.3 years. Forty-four percent of the respondents acquired management control of their farms by purchase with 55.9 percent of these respondents listing a partnership as the method they prefer to use when stepping out of management control. Farmers with vocational agriculture training had a higher rate of acquisition of management control by the partnership method than did the other groups. The majority of the 51 farmers who plan to retire within the next 15 years preferred to establish partnerships.

Thirty-seven farms changed hands during the past five years with retirement representing the most common reason for change. The data indicate a 50 percent increase in the next five years in this reason for farm change.

The respondents were asked to rate the six different instructional areas which were included in the questionnaire. The rankings of the weighted scores from first to last are as follows: farm management, livestock production, crop production, choosing an occupation, farm mechanics, and civic and social activities. The ratings of the various topical areas within each of the six areas of instruction showed that topics more closely associated with management were ranked high while skill areas were rated low. There was little difference between the way in which the various groups rated the areas of instruction and the topics within the instructional areas. In some instances those respondents with agricultural training seemed to have a greater interest in the more advanced topics while age also showed some differences in the responses.

88. SUKHASEM, SHGAD. The Farm Mechanics Curriculum in Kansas High Schools. Master's Report, 1965, Kansas State University, 77 pp., Library, Kansas State University, Manhattan.

Purpose. To determine (1) how the vocational agricultural teachers organized the farm mechanics course into instructional areas; (2) how many instructional areas there were in farm mechanics; (3) why the vocational agriculture teachers selected certain courses; and (4) the methods that vocational agriculture teachers used in determining the lessons to teach in each instructional area in farm mechanics.

Method. Interviews were conducted with 14 vocational agriculture teachers in Kansas high schools and 56 students enrolled in the vocational agriculture departments in these schools.

Findings. Five major instructional areas were taught in farm mechanics: farm shopwork, farm power and machinery, farm building and conveniences, farm electrification, and soil and water management. The total number of periods for teaching farm mechanics in the high schools was 277 periods for four academic years. Of this farm shopwork was taught 80 periods, farm power and machinery 82 periods, farm building and conveniences 40 periods, farm electrification 46 periods, and soil and water management 29 periods. The teachers wanted to increase teaching time in the areas of farm shopwork, farm electrification, farm power and machinery, and soil and water and management, while they wanted to decrease time in farm buildings and convenience. Ninety-five percent of the vocational agriculture students had improvement programs in farm mechanics. Sixty-six percent of the vocational agriculture students had shops at their homes. Most of the vocational agriculture students also completed projects in the school shop.

89. THELL, JOHN L. Desirable Characteristics of Agriculture Instructors in Minnesota as Interpreted by Public School Administrators. Paper, M.A., 1965, University of Minnesota, 85 pp., Library, Department of Agricultural Education, University of Minnesota, St. Paul.

Purpose. To determine the opinions and attitudes of superintendents and principals in Minnesota high schools where vocational agriculture is taught concering the following six areas: (1) quality and scope of program; (2) professional traits of teachers; (3) personal traits of teachers, (4) professional growth and competence of teachers, (5) community relationships, and (6) classroom and individual instruction.

Method. Questionnaires were submitted to superintendents and principals of all public secondary schools in Minnesota having vocational agriculture departments to determine their opinions regarding the areas listed.

Findings. The 20 factors ranked from most to least important by high school superintendents were: moral standards, personal character, respect from students, belief in vocational education in agriculture, loyalty, teacher-student relationship, abides by agreements, respects school regulations, enthusiasm, cooperates with other faculty members, work habits, cooperates with others, knowledge of agriculture science and technology, works harmoniously with administration, public relations, respect in community, teacher-parent relationships, appreciation of rural life, ethical approach to professional matters, and dedication to profession.

The 20 factors ranked from most to least important by high school principals were: abides by agreements, respects school regulations, respect from students, moral standards, works harmoniously with administration, belief in vocational education in agriculture, appreciation of rural life, loyalty, ethical approach to professional matters, teacher-student relationships, keeps administration informed, knowledge of agricultural science and technology, personal character, enthusiasm, cooperates with other faculty members, dedication to the profession, discipline, work habits, cooperates with other, and teacher-parent relationships.

The majority of superintendents and principals indicated that to be a successful instructor of vocational agriculture the potential teacher must exceed in the factors listed in this summary.

90. THIPPHAWONG, BOUNNONG. An Analysis of the Social and Educational Systems of Laos in View of Establishing Teacher Education in Agriculture for Elementary School Teachers. Thesis, Ph.D., 1966, Michigan State University, 166 pp., Library, Michigan State University, East Lansing.

Purpose. To analyze educational data and the socioeconomic information in order to determine the needs of pre-service and in-service training in agriculture for elementary school teachers, to suggest a new educational policy and a new curriculum which will meet the needs of the daily life of the rural folk, and to explain how teacher education in agriculture could make contributions to the national socioeconomic development.

Method. Primary sources of data included government statistic reports, studies from the Ministries of Education, Economy, and Agriculture, other documents from the archives of the Ministry of Education, and unpublished studies and materials filed at the National Teacher Training Center. Secondary sources of data included books on Laos, publications from UNESCO, USAID, FAO, ECAFE, and various articles pertinent to the study.

Findings. Laos is predominately an agricultural country with 93 percent of its population engaged in productive farming. Economic growth in Laos for the next two decades or more will probably be dependent upon the development of agriculture, animal husbandry, forestry, and fishery. At present, rural youth and adult farmers obtain little, if any, assistance from the Department of Agriculture partly because it is understaffed and there is no institution to train agricultural personnel in the country. Natural resources are abundant, yet these vast resources are being wasted through misuse and ignorance. Agricultural knowledge and training for the rural folk could be the key to help change and improve this.

Elementary school teachers constitute the largest government body and teachers are spread throughout the country. The National Teacher Training Center is the largest and most important institution training prospective teachers. Therefore , introducing agricultural courses as part of the total teacher training program for rual elementary school teachers will enable them to help rural students and rural folk to cope with the problems of every day living.

This study is an attempt to provide those administratively responsible for the development of teacher education in Laos with the necessary data and information that will enable them to recognize the importance of emphasizing the agricultural program for rural elementary school teachers. The National Teacher Training Center has the potential to help bring about this change. It also has a distinctive role to play in the socioeconomic development of the country through development of a suitable training program for rual elementary school teachers.

91. THOMPSON, JOHN FRANCIS. Career Pattern Analysis of a Selected Group of Former Vocational Teachers. Thesis, Ph.D., 1966, Michigan State University, 145 pp., Library, Michigan State University, East Lansing.

Purpose. To discern those factors contributing to the career development of a selected group of former vocational teachers (1) who graduated from Michigan State University in 1952, 1956, 1958, 1960, and 1961 qualified to teach either agriculture, business, or home economics; (2) who began to teach vocational education immediately after college graduation; and (3) who taught for one or more years but were not teaching in the fall of 1965.

Method. Longitudinal type career information was gathered. Questionnaires were returned by 88 percent of the teachers which resulted in 205 careers of former vocational teachers being analyzed for the study. The analyses included the use of chi-square, Kruskal-Wallis One Way Analysis Model, Spearman Rank Correlation Coefficient, Miller-Form Career Pattern Paradigm and descriptive career patterns.

Findings. Differences among factors which contributed to career development of former vocational teachers were more sharply discernible by sex, area of residence at birth, parental educational attainment, Miller-Form Career Patterns, and descriptive patterns. Career choice of former vocational teachers was like that of teachers in general, as the women respondents decided to become teachers somewhat earlier than did men and the majority did not decide to become teachers until after college entrance. Mothers of former vocational teachers had a median education level of 12 years, which was one year higher than the educational level of the fathers. Nearly two-thirds of the former vocational teachers' parents had been blue-collar workers.

There was a numerical progression in the rate of exit. The peak exit rate occurred during year two for the home economics and business teachers but during year four for agriculture teachers. Former vocational teachers selected teaching for its physical and interpersonal dimensions. They entered jobs very closely allied to the subject matter in which they were teaching as they left vocational classrooms. The former vocational teachers were characterized as having high self-expression and people-oriented values but much lower extrinsic and other values. They agreed that only their ideal self-expression and people-oriented values could be met in teaching.

A positive attitude toward re-entering vocational teaching was held by 55 percent of the respondents--by 41 percent of the former agriculture teachers and by nearly two-thirds of the former business and home economics teachers. The respondents who had a rural orientation and whose parents were blue-collar workers and possessed low levels of education perceived their teaching social status as being higher than that of their parents.

The Miller-Form Career Pattern Paradigm classified careers as being secure or insecure. Those exhibiting insecure patterns (1) decided to become a teacher earlier, (2) were more likely to seek education beyond the bachelor's degree, (3) were much more likely to enter college as they exited, (4) had a positive attitude toward re-entering vocational teaching on a full-time basis, and (5) were more likely to climb in socioeconomic status as they left teaching than were those former vocational teachers classified as having secure career patterns.

Five descriptive career patterns were identified and titled: family, in-out, horizontal, vertical, and cautious. The vertical and cautious career pattern holders (1) had a rural orientation, (2) chose teaching for its interpersonal dimensions, (3) decided to become teachers while in college, (4) sought education beyond the bachelor's degree, (5) would re-enter vocational teaching on a full-time basis, and (6) perceived their teacher social status as being quite a bit higher than that of their parents. Those respondents holding family and in-out career patterns were similar to each other but quite different from those holding vertical and cautious career patterns.

92. TODD, HOLLIS ELBERT. A Role Analysis of the Perceptions of the Beginning Vocational Teachers and Their Professional Difficulties in Role Performance. Thesis, Ph.D., 1965, The Ohio State University, 249 pp., Library, The Ohio State University, Columbus.

Purpose. To determine (1) the role of the teacher of vocational agriculture as perceived by the beginning teacher prior to extensive teaching and after extensive teaching during the first year, (2) the similarity and/or dissimilarity of role perceived for the vocational agriculture teacher's position by the beginning teacher and the successful experienced teacher, (3) the degree of agreement in role expectation and performance by the beginning teacher of vocational agriculture, and (4) the relationship between the beginning teacher's role perception of the vocational agriculture teacher's position and professional difficulties encountered.

Method. The data were secured primarily through group interviews utilizing a role perception instrument containing 77 role definition items distributed among eleven role areas essential in the total program of vocational agriculture. There were 25 beginning teachers included in the study who were contrasted with 15 successful, experienced teachers previously identified by another role study. Analysis of the data utilized weighted-means, rank-correlation, and chi-square.

Findings. An analysis of the role perceptions of beginning and experienced teachers in Ohio for the 77 role-defining items revealed that: (1) beginning teachers' role perceptions or expectations changed little during the first year of teaching; (2) beginning and successful experienced teachers held significantly similar role perceptions or expectations for the teacher's position, however, less than significant agreement was found for four of the eleven role areas; (3) performance of the beginning teachers differed somewhat from their role expectations for the teacher's position; (4) there was significant agreement between role perceptions and role performances regarding relationships with school and administration, teaching farm mechanics, public relations and guidance and counseling--with significant disagreement for classroom teaching--while there was apparent agreement for developing programs, advising the FFA, conducting young and adult farmer programs, selecting and using physical facilities, making professional improvement and understanding of the administrator's role in the vocational agriculture program; and (5) there was no discernible pattern of relationship between role perceptions for the teacher's position and professional difficulties experienced by the beginning teachers.

93. UELAND, ERMAN O. Attitudes of High School Teachers Toward Agricultural Education in Polk County, Minnesota. Thesis, M.A., 1965, University of Minnesota, 70 pp., Library, University of Minnesota, St. Paul.

Purpose. (1) To determine the attitudes toward agricultural education of teachers who are teaching in fields other than vocational agriculture in the public high school; (2) to determine which fields were most favorable; (3) to determine the possibilities of expanding agricultural education into other curriculums through the use of an agricultural specialist resource person; (4) to determine the influence a vocational agricultureprogram may have on teacher attitudes toward agricultural education.

Method. A selected set of statements were submitted to all teachers in six schools in Polk County. School administrators and vocational agriculture teachers were omitted. The attitude survey form was distributed and collected by either the school administrator or the vocational agriculture teacher.

Findings. There is no great difference in attitude toward agricultural education among any group of teachers. Elementary teachers tend to agree more strongly that all students should receive some instruction in the field of agriculture. Teachers in schools with vocational agriculture departments tend to have a more favorable attitude than teachers in schools without such a department. Many teachers are not informed about the FFA. Based on the number of teachers who felt that college-bound students should not take four years of vocational agriculture, more publicity needs to be given to the college preparatory value of the agriculture curriculum

94. USERA, ULISES. Instructional Program in Farm Mechanics for Uruguay Youth. Thesis, M.S., 1966, Iowa State University of Science and Technology, 101 pp., Library, Iowa State University of Science and Technology, Ames.

Purpose. To analyze the instructional programs in farm mechanics in Uruguay and to indicate the ways by which Uruguay might profit from the experience of the United States.

Method. A questionnaire was used to obtain information from the principals of the 19 agricultural schools of Uruguay concerning the instructional programs, facilities, and equipment available for the teaching of farm mechanics. The agricultural schools were classified as general and specialized schools according to differences in entrance requirements and curriculum emphasis.

Findings. Of the 19 agricultural schools in Uruguay, 13 were general schools at the time of the survey and six were specialized schools. Students enrolled in the general agricultural schools had the following program of activities: 12 hours per week of classroom instruction in farm mechanics, 27 hours of practical experience, and six hours of supervised study. Seven of the 13 general schools were keeping follow-up records of their graduates and all the specialized schools did so.

Graduates working on their family farms ranged from zero to 50 percent. The number of the students working on farms as workers after graduation represented less than 31 percent of those graduated in almost 40 percent of the general schools. More than 60 percent of the general schools had ten percent or less of their former students working in industries. Three to 30 percent of the graduates were in occupations other than farming and industry. No school had, at the time of the survey, a classroom to be used solely by the farm mechanics instructor and no farm mechanics laboratory was found to have an adjoining classroom. Inadequate classroom floor space per student was found in more than one-half of the institutions. Regardless of the square feet of floor space per student, minimum dimensions for the farm mechanics laboratory were in many cases a limiting factor. Most schools did not have farm machinery and power tools and were poorly equipped to teach farm electrification and electric motors. Only seven schools were equipped to teach any competencies in arc welding and portable electric tools were not available in most schools.

95. VAN CLEAVE, HAROLD BUFORD. A Study of Judging Contests in the South Central District of Kansas. Master's Report, 1965, Kansas State University. Library, Kansas State University, Manhattan.

Purpose. To determine the attitudes of vocational agriculture teachers in South Central Kansas and college specialists who were familiar with the judging contests toward activities in the district judging contests.

Method. The information in this study was obtained through interviews with 18 vocational agriculture teachers in the South Central Kansas District and with seven specialists at Kansas State University.

Findings. Teachers rating the importance of the four contests in their teaching program indicated livestock ranked first, agronomy second, dairy third, and poultry fourth. Almost 50 percent of the teachers spent no time with freshmen in preparation for district contests. The majority spent less than ten hours with fresmen. Teachers spent varied numbers of hours from none to more than 14 hours on sophomores. The junior class spent the most time for instruction in judging with the majority of teachers taking 12 hours and one-fourth of them more than 14 hours. Seniors received slightly less instructional time than juniors. Most of the teachers train all students in class and select the team on the basis of performance. A few of the teachers ask for contest team volunteers and select a team on the basis of performance.

In the area of contest improvement several teachers thought the livestock classes could be made more placeable. In the crops contest several teachers wanted more demonstrations on how to identify plants and seeds. In dairy several teachers wanted better-quality animals used in the contest. If students were used to hold the cattle, they should be rewarded with the better holders getting an award. In poultry judging, the only major suggestion felt worthwhile by the teachers was a demonstration on modern breeds and hybrids. Instructors and specialists indicated that contests should be practical and revised as our agriculture changes.

96. WARMBROD, J. ROBERT. Technical Education in and for Rural Areas: Manpower Needs and Employment Opportunities for Workers Needing Knowledge and Skill in Agriculture. Staff Study, 1966, University of Illinois, 37 pp., Department of Vocational and Technical Education, University of Illinois, Urbana.

Purpose. To determine the number of workers employed in nonfarm business and industrial firms who need knowledge and skill in agriculture, to determine the future employment opportunities in nonfarm businesses for persons with knowledge and skill in agriculture, and to compare the opportunities for employment in nonfarm businesses with the opportunities for entry into farming.

Method. All nonfarm business and industrial firms in a 14-county region of East-Central Illinois comprised the population for the study. Business and industrial firms were identified from the classified sections of telephone directories. A two-stage, cluster sampling technique was used to select business firms from which data were collected. Business firms were statified by type of business (degree to which agriculturally oriented) and by size of population center in which the firms were located. Interviews were made by the project staff in 422 business firms. Estimates of the replacement needs in farming were calculated from census data.

Findings. Estimates indicated the 18 percent of the workers employed in all nonfarm business and industrial firms, both agricultural and nonagricultural, in areas with population centers of less than 25,000 were working in jobs involving knowledge and skill in agricultural subjects. Seventy-five percent of the employees in agriculturally-oriented businesses in areas with population centers exceeding 25,000 were working in jobs involving knowledge and skill in agriculture. When the number of farmers and hired farm workers were added to the number of workers in nonfarm businesses needing a knowledge of agriculture, it was found that 41 percent of all employed workers in the region were engaged in occupations involving knowledge and skill in agriculture.

In areas with population centers of less than 25,000, employers estimated that a 35-percent increase in the number of workers possessing knowledge and skill in agriculture would be needed in the next five years to meet employment demands created by growth of business firms. In areas with population centers exceeding 25,000, employers indicated a need for a 24-percent increase for workers in agricultural job titles during the five-year period to meet employment demands created by growth of business firms. Essentially all of these new workers need some type of post-high school education. Employment needs in professional and unskilled occupations were excluded from the study. For each farm replacement needed during the five-year period, approximately 3.5 workers possessing knowledge and skill in agriculture will be needed to meet demands created by the growth of nonfarm business and industrial firms.

The responses of employers indicated that future employment opportunities are greatest in horticulture jobs in areas with population centers exceeding 25,000 and in the following categories both in the rural and urban areas: agricultural machinery and construction, livestock marketing, seed and fertilizer, feedmill and elevator, and general agricultural sales and service.

97. WELL, WILLIAM. A Comparison of the Farmers in the Medina, North Dakota Public School District Who Have Attended Adult and Young Farmer Courses and Those Who Have not Attended. Thesis, M.S., 1965, North Dakota State University, 50 pp., Library, North Dakota State University, Fargo.

Purpose. To compare the farmers in the Medina Public School District who had attended three or more adult and/or young farmer courses during the school years of 1957-1963 with an equal number who had not attended.

Method. From the files in the Medina vocational agriculture department, a list of all farmers and young farmers who had attended three or more adult courses during 1957-1963 was secured. Twenty-five farmers qualified for this group. From the files of the County Agricultural Stabilization and Conservation office a list of all of the active farm operators in the school district was obtained. The 25 farmers who had attended three or more years of classes were removed from the list and then by a random sampling technique a matching list of 25 farmers was selected. Information was gathered during personal interviews.

Findings. The farmers who had attended adult and young farmer classes were younger, had farmed fewer years, had more formal education, grossed about twice as much income, had larger farms, read more agricultural literature, and were more active in community organizations than the nonparticipators. The nonparticipators relied upon other farmers for agricultural information more than did the participators. The participators favored holding adult and young farmer classes throughout the year excepting one or two months in the summer. An increase in emphasis upon instruction in farm mechanics was reported.

98. WILLIAMS, DAVID LEWIS. A Study of the Teaching of Farmer Cooperatives in Vocational Agriculture Departments in Selected High Schools in Kansas. Master's Report, 1965, Kansas State University, Library, Kansas State University, Manhattan.

Purpose. To determine the teaching methods and techniques employed in the teaching of farmer cooperatives in vocational agriculture.

Method. The information was obtained through a review of selected literature and a questionnaire of 32 vocational agriculture teachers in Kansas.

Findings. The average amount of time devoted to the teaching of farmer cooperatives in vocational agriculture was eight hours in the senior year, seven hours in the junior year, six hours in the sophomore year, and three hours in the freshman year. Pamphlets published by farmer cooperatives were used by 97 percent of the teachers as the basic reference material in the teaching of farmer cooperatives. Motion pictures were the most used visual aid, being employed by 63 percent of the teachers. Field trips were employed by 87 percent of the teachers. Supervised study and class discussion were used by 88 percent of the teachers. When resource people were used, 72 percent of them came from local farmer cooperatives.

Competitive activities sponsored by the Kansas Cooperative Council were used as a motivation tool. All teachers participated in both the Cooperative Activity Contest. Fifty-three percent of the schools participated in the Cooperative Speech Contest. Eighty-seven percent of the teachers used student owned or operated cooperatives. The livestock chain cooperative was used by 50 percent of the teachers in the survey. Eighty-four percent of the schools in the study had at least one farmer cooperative organization in their community. Fifty percent of the cooperatives sponsored tours of local cooperative facilities while 59 percent aided the school in administering the cooperative quiz.

99. ZIMPEL, JESSE W. Characteristics of Wisconsin Male Youth Employed in Agribusiness and Non-agribusiness Occppations. Thesis, M.S., 1965, University of Wisconsin, 139 pp., Library, University of Wisconsin, Madison.

Purpose. To compare social and educational characteristics of youth who were engaged in agribusiness with youth in nonagribusiness occupations. A secondary aspect of this investigation was a modified county by county study of the nonagribusiness youth from Manitowoc compared to the nonagribusiness youth from Adams, Iowa, Price, and Polk counties.

Method. The population consisted of the 1957 male graduates of the following five Wisconsin counties: Adams, Iowa, Manitowoc, Price, and Polk. Data from 430 respondents were studied according to classification of their respective occupations as agribusiness or nonagribusiness. Data used in the study were gleaned from five of the eight questionnaires which had been administered between December 1956 and December 1964.

Findings. Educational attainment was positively related to the occupation in which the youth were engaged for a livelihood. This was evidenced as more of the white-collar workers had attained a bachelor's degree or had received some college training than had the blue-collar workers, service workers, or farm workers. The educational level of the blue-collar workers was mainly high school and vocational-technical training. Scholastic achievement in high school was related to occupational classification for both the agribusiness and nonagribusiness youth. Of the youth who had achieved a "B" average or better, nearly 60 percent were white-collar workers. About two out of three farm workers had received less than a "B" average in high school. The highest percentage of agribusiness and nonagribusiness youth with intelligence quotient scores of 110 and above were white-collar workers. The respondents who were of nonfarm residence, had two years or less of vocational agriculture and had not participated in FFA were represented by a high percentage of youth in white-collar occupations.

The youth classified as agribusiness were evenly distributed in each of the occupational classifications, irregardless of whether or not they had been 4-H members. A higher percentage of the nonagribusiness youth who were in white-collar occupations had not been 4-H members. There was little or no relationship between the time of marriage and the present occupational classification of the youth. Migration out-of-state was predominately a characteristic of the white-collar workers. The migration of the youth out-of-county was nearly equal for the white-collar and blue-collar workers. The data analyzed concerning senior aspirations and fathers' occupation indicated that both the agribusiness and nonagribusiness youth tended as seniors to aspire for occupations unrelated to agriculture.

The definition of agribusiness as used in this investigation resulted in a heterogeneous grouping of youth in the agribusiness and nonagribusiness categories. Consequently, little difference in the social and educational characteristics existed between the youth of the two major categories.

The data comparing the nonagribusiness youth of Manitowoc to the youth of Iowa, Adams, Price, and Polk counties revealed that Manitowoc tended to have an urbanizing effect on the overall data results. This was evidenced as nonfarm residence, two years or less of vocational agriculture in high school and not having participated in FFA or 4-H were characteristics most representative of the youth from Manitowoc County. Measured mental ability and scholastic achievement in high school were two variables that were very similar for the youth of the five counties. Manitowoc retained nearly 72 percent of the youth within the home-county compared to about 29 percent retention of the youth in home-county for the combined four counties.

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* The summaries are arranged alphabetically by author and numbered consecutively. Numbers refer to the number of the study rather than to page numbers.